AN INTERPRETIVE, MULTILEVEL THEORY OF SCENARIO PLANNING: ADVANCING HUMAN RESOURCE DEVELOPMENT THEORY BUILDING

A Dissertation

by

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ABSTRACT

This study advances theory building as the process of modeling real-world phenomena and uses a theory-to-research strategy in the theory building process. A five-step theory building methodology constitutes applied theory building in general and was applied in grounding scenario planning (SP) theory. The methodology for multilevel theory building (MLTB) utilized in this study was preceded by recognition that human resource development (HRD), SP, and organizations are multilevel phenomena. This study focused on the theoretical perspectives underpinning SP previously addressed in HRD literature and advanced claims that can be made with respect to ontological and epistemological philosophies found in the interpretive (philosophical hermeneutics) paradigm capable of attending not only to the conjectural nature of futures studies, but a theory of understanding too.

Scenario planning is a multilevel topic involving individuals, dyads, and teams within and between social performance systems. The established limitations in current SP theory and human resource development (HRD) theory building can be addressed by examining the topic of SP through a multilevel lens. Based on the SP and HRD interests, the threefold purpose of this study is to develop an interpretive multilevel theory of SP as a means of strengthening the theoretical connection between SP and HRD, advancing HRD theory building, and contributing to meaningful SP theory building. A new MLTB framework is developed and subsequently used to develop a multilevel theory of SP. Finally, future research options are suggested in order to make the appropriate SP interpretive multilevel

theory refinements, continue the dialogue about MLTB and multilevel considerations in HRD.

DEDICATION

I would like to dedicate this dissertation to my parents in recognition of their support and confidence that I would not only begin an academic journey leading toward a graduate degree, but would earn a doctorate degree. It seems that they too have been supporters of futures studies like scenario planning which is the phenomenon of interest in this study. Again, this manuscript is dedication to Mrs. Dorothy Matlock and Mr. James Matlock Jr. for your love and support.

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In this study, I attempt to understand a complex phenomenon, make a contribution to scenario planning theory building, and connect SP theory building to the field of human resource development. A quest of this nature is not undertaken by the student alone but is accompanied by mentors and supporters all of which contribute to the outcome of the scholarly quest.

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CHAPTER I

INTRODUCTION

A historical review of scenarios can be traced to the early philosopher Plato and Prussian military strategist such as Clausewitz and von Moltke (Bradfield, Wright, Burt, Cairns, van der Heijden, 2005). Scenario planning (SP) emerged into Western culture originating over 60-years ago from military intelligence war games used by the U.S. military (Bradfield et al., 2005; van der Heijden, 1996). SP has been defined by Chermack and Lynham (2002) in this way, "Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance" (p. 376). After WW II, SP was initially applied to U. S. social forecasting and public policy by Herman Kahn at the RAND (acronym developed from Research and Development) Corporation later at the Hudson Institute, as well as companies like Deloitte & Touche, GE (General Electric), SRI (Stanford Research Institute 'Futures Group'), and Royal Dutch Shell (Bradfield et al., 2005; van der Heijden, 1996; Verity, 2003). Bradfield et al., (2005) informed us the Delphi and systems analysis techniques were developed in the 1950s to elicit and synthesize subject matter expert opinions from which modern day scenario techniques emerged. SP can be viewed as an alternative to strategic planning which branched from the scientific management project (Mintzberg, 1994a).

Mintzberg's (1994a) observation of mid-1960s strategic planning concluded, "True to the scientific management pioneered by Fredrick Taylor, this one best way [of strategic

planning] involved separating thinking from doing and creating a new function staffed by specialists: strategic planners" (p. 107). Mintzberg was critical of strategic planning as it was practiced and declared, "Strategic planning isn't strategic thinking. One is analysis, and the other is synthesis" (p. 107). The cornerstone of Mintzberg's argument focused on, "…strategic planning often spoils strategic thinking, causing managers to confuse real vision with the manipulation of numbers. And this confusion lies at the heart of the issue: the most successful strategies are visions, not plans" (p. 107). If one can move beyond Taylor's rationalist perspective of one reality and therefore one right way of strategic planning and ascribe "uncertainty and unknowable" attributes (Verity, 2003) to the future, then strategic inquiry into a political question like "How does any organization not only survive in a social performance system, but thrive in an uncertain and unknowable future?" can be facilitated through scenario planning. Scenario planning (SP) has developed into a strategy-making process affording scenario planning participants (who are both strategic thinkers and doers) an expansive sense making inquiry technique reflectively considering multiple plausible future realities prior to engaging in reductionist decision-making regarding strategic courses of action.

SP was popularized in the commercial sector by Royal Dutch Shell (referred to as Shell throughout the remainder of this paper) for generating and evaluating strategic business idea options that later migrated into the business community (Bradfield et al., 2005; van der Heijden, 1996). Pierre Wack's (1985a; 1985b) classic *Harvard Business Review* articles were underpinned by an uncertainty regarding actually knowing the future. Wack (1985a) recalled, "Beginning in the late 1960s and early 1970s, Shell developed a technique known as

'scenario planning'. By listening to planners' analysis of the global business environment, Shell's management was prepared for the…1973 oil crisis…and again in 1981…Iran-Iran war…." (p. 73). Verity's (2003) research on SP concluded, "…it was Pierre Wack at Shell and Peter Schwartz at SRI International (Stanford Research Institute at Stanford University) during the 1970s and 1980s who really introduced scenario planning to management as a strategy tool" (p. 186).

During its practitioner led history, SP has realized varied degrees of success, as well as confusion by scenario planning participants regarding the use and purpose of scenarios and scenario planning. Bradfield (2008), HRD scholar, avered, "This confusion may be explained by the fact that unlike other long-range forecasting methods there appears to be no solid theoretically based foundation underpinning scenario planning" (pp. 198-199). Torraco (1997), HRD scholar, posited theory plays a vital role in applied fields such as HRD when he stated, "a profession's theory base prescribes both the knowledge domains and scope of practice over which a profession claims to have expertise" (p. 119). In Chermack's 2002 article titled, *The mandate for theory in scenario planning*, he argued, "It is my contention that scenario planning professionals have failed to make that theory base explicit and, therefore, to explain how this process works" (p. 26). To this end, HRD professionals need to be engaged in scenario planning practice, research and theoretical knowledge development. Chermack and Swanson (2008) argued, "theory and research that support scenario planning…." (p. 130) was a substantial opportunity for HRD professionals to position SP as HRD's primary strategic learning tool.

Due to the complexity of the phenomenon of interest and its 60-years of atheoretical practice coupled with a single SP-HRD theory of scenario planning (Chermack, 2004b, 2005), an interpretive, multilevel theory building process will be adhered to in order to close the SP knowledge gap. Additional goals include, advancing theory building in HRD and contributing to the identified need for alternate perspectives of SP theory. A summary of the literature reviewed for this study is provided below, followed by the statement of the problem, the purpose of the study, the research process and methodology, the scope and limitations of the study, and the significance of the study.

Foundational Building Blocks to Scenario Planning Theory Building

This section of the paper serves as a transition between the historical, atheoretical genesis of SP and theoretical research of this study. SP theory building begins in this section by presenting SP phenomena building block by developing definitions and function of terms like scenarios and scenario planning. Likewise, definition and function of terms such as theory, theoretical model and theory building terminology are offered as central building blocks, since a theory building methodology are essential to the study.

Definition and Function of Scenarios and Scenario Planning

This theory building journey begins by introducing Chermack and Swanson's (2008) definition of the most foundational of SP terms, "Scenarios are…vehicles for exploring the emergent nature of the contextual environment and its impact on organizational strategy" (p. 133). What then is scenario planning? In 2002, Chermack and Lynham responded to this question,

Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance (p. 376).

Table 1 introduces the term scenario planning as the phenomenon of interest for this study.

Table 1 Scenario Planning as a Phenomenon of Interest.	
Scenarios	Scenarios are…vehicles for exploring the emergent nature of the contextual environment and its impact on organizational strategy (Chermack & Lynham, 2002, p. 376).
Scenario Planning	Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organizational learning and improving performance (Chermack & Lynham, 2002, p. 376).

Therefore, the established scholarly definition of scenario planning will serve as a theory building stepping stone (Swanson & Holton, 2009) for this scholarly research journey. It should be noted, even with a definition of SP, we can run into difficulties with extant SP theory deficiencies. "So what" is the importance of SP? Van der Heijden (1996), in his book titled "*Scenarios: The Art of the Strategic Conversation,*" described SP from a rationalist perspective in this way, "…the ultimate purpose of the scenario planner is to create a more adaptive organization which recognises change and uncertainty, and uses it to its advantage" (p. 13).

Definition and Function of Theory, Theoretical Model and Theory Building

Reynolds (1971) posited the following definition of theory, "Statements that are considered part of…knowledge in the set-of-laws, the axiomatic, or the causal process forms" (p. 11). Dubin (1969/1978) defined theory contributions in the scientific enterprise in this way, "Coming from theory to research, attention is focused on truth, the nature of reality, the processes of knowing, and the logic of meaning statements" (p. 8). Bacharach's (1989) definition of theory stated, "A theory is a statement of relations among concepts within a set of boundary assumptions and constraints. It is no more that a linguistic device used to organize a complex and empirical world" (p. 496). Bacharach's definition of theory succinctly identified elements of a theoretical model. Therefore, it will inform the sufficient and necessary elements of conceptual framework for a theoretical model for this study. The elements for the theoretical model in this study will consist of concepts, laws of interaction, and boundaries. Table 2 compares scholarly definitions of theory (listed chronologically) in order to inform the definition of theory for this study.

Table 2 Comparative Definitions of Theory.

Theorist	Theorist's Definition of Theory
Dubin (1969/1978)	A theory is a model of some segment of the observable world. Such a model describes the face appearance of the phenomenon in such terms as structure, textures, forms, and operations (p. 223).
Reynolds, (1971)	Statements that are considered part of…knowledge in either the set-of-laws, the axiomatic, or the causal process forms (p. 11).
Theorist	Theorist's Definition of Theory
Sutherland (1975)	An ordered set of assertions about a generic behavior or structure assumed to hold throughout a significantly broad range of specific instances (p. 9).
van de Ven (1989)	Good theory is practical precisely because it advances knowledge in a scientific discipline, guides research toward crucial questions, and enlightens the profession of management (p. 486).

Table 2 Continued.	
Theorist	Theorist's Definition of Theory
Bacharach (1989)	A theory is a statement of relations among concepts within a set of boundary assumptions and constraints (p. 496).
Kelly (1991)	A theory is an implement in man's quest for a better understanding of the future (p. 19).
Torraco (1997)	A theory simply explains what a phenomenon is and how it works (p. 115).

This proposed conceptual theory building model is consistent with Dubin's (1969/1978) understanding of a theory building model,

> All scientific models, then, are the imaginative recreation of some segment of the observable world by a theorist interested in comprehending the forms and functions of selected segments of the world around him. It is clear, then, that scientific models are wholistic in that they put together both structure and function into closed systems whose characteristics are the consequence of the elements composing the system and the laws by which the elements interact among themselves (p. 223).

It is clear, from the definitions of theory cited above, that theory building is important to researchers and practitioners alike because theory helps explain phenomenon of interest specific to a field of study. Based on the role of theory described above, theory building specifically in emerging fields is the engine for advancing the field of HRD and its related theory.

Swanson (2008) advocated for HRD scholars to conduct scenario planning theory building in order to compliment and move beyond strategic planning techniques when he put forth, "The short-term value of scenario planning is to provide thoughtful input to its

companion, strategic planning" (p. 127). It would be helpful if theory integrated these purposes statements. For an understanding of what a theory is and what a theory does, HRD scholars turn to Torraco (1997) who noted, "A theory simply explains what a phenomenon is and how it works" (p. 115). With a working definition of theory, we are able to turn our attention to the nature of a theoretical model. A theoretical model is produced when units are identified and their laws of interaction, boundaries, systems states, as well as propositions have been articulated about a phenomenon of interest (Dubin, 1969/1978). Theory building in an applied discipline as described by Dubin (1969/1978) is, "one way to link theory with research" (p. 2). As Holton and Lowe (2007) put forth, "It is difficult to imagine starting a theory building journey without having attained an initial understanding of the phenomena sufficient to realize that new theory is needed" (p. 305).

Grasping a rudimentary description of the phenomenon of interest, we can move toward making a connection between SP and HRD. Table 3 represents building block definitions of the phenomenon of interest, theory, theoretical model and theory building.

Table 3 Definitions of Theory, Theoretical Model and Theory Building.

Theory	A theory simply explains what a phenomenon is and how it works (Torraco, 1997, p. 115).
Theoretical Model	A theoretical model is produced when units are identified and their laws of interaction, boundaries, systems states, as well as propositions have been articulated about a phenomenon of interest (Dubin, 1969/1978).
Theory Building	Coming from theory to research, attention is focused on truth, the nature of reality, the process of knowing, and the logic of meaning statements. (Dubin, 1969/1978, p. 8).

The examination of HRD-scenario planning connection emphasizes two contexts—scholarly literature exploring HRD—related areas with explicit connections to scenario planning and the scholarly scenario planning literature outside the HRD field that has implications for HRD-scenario planning. But what does all this talk about theory in HRD mean? To this philosophical inquiry, Swanson (2007) offered, "Without a theory framework, there is a sense of randomness and incoherence to theory discussions and development" (p. 322). Additionally, Swanson informed us, "Most applied disciplines are attempting to make significant advancements in articulating the theoretical foundation of their field of study" (p. 332). Most accounts regarding HRD history as a field is fifty to sixty years old (Ruona, 2000). One such scholar contributing to SP-HRD theory building is Thomas Chermack (2004b). To date, Chermack (2004b) has been the only identified contributor to SP theory building in general and specifically connecting SP to HRD.

Connecting Scenario Planning Theory with HRD's Theory Base

Torraco (1979) informed us, "Theory building is the process of modeling real-world phenomena" (p. 123). Theory-to-research strategy in theory building processes has been described by Lynham (2002b) whereas, "…theory is made explicit through the continuous, reiterative interaction between theory construction and empirical inquiry" (p. 227). Chermack's (2004b) theory building process utilized a theory-to-research development strategy and is noted as a contribution to SP-HRD theory building. Because of the relative newness of HRD theory building and, especially, theory building in SP, Chermack's (2004b) efforts are commendable—particularly when examining his work from both a general theory building perspective and from an empirical analytical frame. However, the framing of the

extant theory also serves as a constraint to SP theory. Two major areas that limit our understanding of the phenomenon are centered in the single-level (House, Rousseau, Thomas-Hunt, 1995; Keough & Shanahan, 2008; Korte, 2008; Kozlowski & Klein, 2000) focus of SP as a phenomenon, when in fact SP is a multilevel phenomenon. Secondly, Chermack's choice of an empirical analytic approach contrasts strongly with the constructivist nature of SP. SP needs to be investigated, and related theory framed, in an interpretive/constructivist context because scenario planning participants (during the scenario analysis process) assess the contextual environment (internal & external to the organization) as a subperformance system nested within a larger subperformance system within a society. Additionally, elaborative first-person data collection and analysis experiences of SP participants are outside the empiricist, Cartesian, dualist tradition for generating objective knowledge (Popper, 1959, 1968, 1972).

Predecisional Theory Building Considerations Prior To Entering the Theory-Research-Development-Practice Cycle

Before theorizing about SP, it is important to review the importance for theorizing about scenario planning. Swanson (2008) commented on the volatile environmental variable and rate of change in which organizations function stated, "Given these present conditions, which are only likely to continue and intensify, scenario planning now rivals strategic planning as a companion realm of activity for protecting or advancing the future state of an organization" (p. 127). Chermack and Swanson (2008) argued for, "The fundamental position being advocated…is that HRD professionals should capture and develop the research and practice of scenario planning as the profession's primary strategic learning tool"

(p. 130). Although SP has been positioned by Swanson and Holton (2009) to be a primary strategic learning tool, SP theory building is critical to closing the SP practice—research gap. To close that gap, SP theory building needs to be undertaken by HRD professionals. This study proposes an interpretive multilevel SP theory building solution addressing the phenomenon of interest. Table 4 below represents predecisional theory building considerations prior to entering SP as the phenomenon of interest into the theory-research-development-practice cycle.

Table 4 Predecisional Theory Building Considerations Prior to Entering Scenario Planning Phenomenon into the Theory-Research-Development-Practice Cycle.	
Scenario Planning as an Element of the Theory of Understanding	Scenario planning in the philosophical hermeneutic tradition contributes to a theory informed by the ontological self-understanding nature of the phenomenon of interest
General Method of Theory-Building in Applied Discipline (Lynham, 2002b)	This iterative five stage model represents conceptual development, operationalization, confirmation or disconfirmation, application and continuous refinement and development. However, it is silent on conceptual development of phenomenon of interest philosophical underpinning prior to entering the conceptual development of the theoretical framework. Therefore, this study will make a contribution in this regard.
Theory-Research-Development-Practice Cycle (Swanson, 1997)	A deductive to inductive theory building process for this study will define theory building for scenario planning participants whom will generate inductive to deductive theory resulting in contextual, local and negotiated meaning informing action planning
Theory Building Model for Applied Disciplines (Dubin, 1969/1978)	Conceptual framework for the theory: units, laws of interaction, boundaries and system states

With a recognition that SP theory contributes to both a theory of objective knowledge (Chermack, 2004b, 2005) and a theory of understanding, the theorist needs to consider alternative theory building models such as interpretive theory building which this study

proposes to undertake. Predecisional considerations regarding a general method of theory building can also be applied from Lynham's General Method of Theory-Building in Applied Disciplines. Additionally, after a decision is made to utilize deductive to inductive theory building processes, the scientist is prepared to enter the phenomenon of interest into the theory-research-development-practice cycle. Lastly, selection of relevant theory building elements of Dubin's Theory Building Model for Applied Disciplines can be made to ensure interpretive outcomes of the resultant SP theory.

The Need for Multilevel Organizational Theory

Levels-of-analysis issues have confounded organizational theorists and researchers for decades. According to Klein, Dansereau, and Hall (1994),

> It has led to confusion and controversy regarding the appropriate level of analysis for, and thus the appropriate conclusions to be drawn from research on topics as varied as performance appraisals, job design, training, pay, leadership, power, participation, communications, climate, culture, technology, organization performance and structure…." (p. 196).

Schneider, Smith, and Sipe (2000) argued in personnel psychology, "The micro model ignores organizational issues and the macro model ignores individual differences" (p. 92). Kozlowski et al. (2000) reported in training level issues, "There is a presumption that individual-level training outcomes aggregate and emerge to create valued outcomes at higher levels [of an organization], but there is little theoretical guidance as to how to conceptualize and model these effects" (p. 158). Studying phenomena along single academic discipline lines creates fragmented, narrowly defined scholarly inquiry akin to how hierarchical levels

can create partial, incomplete views of organizations as social performance systems. Therefore, HRD, as a multidiscipline field, can make positive contributions to practice, research and theory building by debating multilevel, multidiscipline phenomenon.

But, how is level of analysis relevant to scholarly phenomena inquiry? Regarding organization and organization behavior Ostroff and Bowen (2000) have argued,

> Psychologist, sociologists, and organizational theorists have long recognized that multiple, interdependent levels in organizations exist and that understanding the interrelations within and between levels is critical to understanding organizations and organizational behavior (e.g., Klein et al., 1994; Roberts, Hulin, & Rousseau, 1978). However, research and theory have lagged behind this thinking (p. 211).

Understanding reasons why multilevel research and theory building has lagged behind recognized level considerations led Klein et al. to five indicators contributing to the delay. They identified five daunting challenges contributing to the lagging behind of multilevel theory development,

> (1) …simply the mass of potentially relevant research and theory available to the would-be theorist, (2) …the barrier of interest, values, and heuristics. The training that researchers receive as doctoral students seldom is multilevel in nature, (3) development of multilevel theory is the difficulty of determining the appropriate scope for such theory, (4) the realities of academic publishing present a fourth potential barrier to the

> development of multilevel theory building…an interdisciplinary and multilevel work may paradoxically be at home everywhere and nowhere: of some interest and appeal to numerous disciplines and journals but of central interest and appeal to none, and (5) the analysis of multilevel data has been the topic of considerable debate (e.g., Bliese & Halverson, 1998; George & James, 1993; Yammarino & Markham, 1992), but perhaps even more daunting than multilevel data analysis is the task of multilevel data collection (p. 244).

In the face of such challenges, few scholars have undertaken multilevel theorizing and the associated methodological difficulties of this theory building method. For those researchers who have undertaken multilevel "…research have focused primarily on measurement and analytic strategies used to investigate multilevel questions" (Morgeson & Hofman, 1999, p. 249).

Klein and Kozlowski (2000b) argued, "a multilevel perspective may thus add depth and richness to theoretical models and studies of topics traditionally examined at just one level of analysis" (p. xvi). Depth and richness are achieved according to Kozlowski and Klein (2000) because, "A levels approach, combining micro and macro perspectives, engenders a more integrated science of organizations" (p. 8). This study follows in the footsteps of Drazin and Schoonhoven (1996) who urged for the integration of multilevel models with a strategic focus. Scenario planning is a strategic focused phenomenon. Additionally, this proposed study will refine Dubin's (1969/1978) single-level, post-positivist theoretical research model so that it accommodates multilevel theory building model with

interpretive outcomes. After revising Dubin's applied theory building model, the revised theory building model will be juxtaposed to Chermack's (2004b) single-level, postpositivist theory of scenario planning. Prior to initiating a multilevel theory building study that accommodates first-person interpretive understanding (*verstehen*) of scenario planning conducted on behalf of an organization, a discussion on HRD and organizations as multilevel entities is merited.

Multilevel Analysis Of Organizations And Their Functional Social Performance Systems

The HRD field and SP as a phenomenon of interest are multilevel processes. Kozlowski and Klein (2000) put forth, "The multilevel perspective is to identify principles that enable a more integrated understanding of phenomena that unfold across levels in organizations" (p. 7). "Theory that begins to bridge the micro-macro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy" (Klein et al., 1999, p. 243). Korte (2008) argued a multilevel theory building (MLTB) perspective, "Viewing organizations as multilevel systems requires that planners attend to the influences of unique elements within each level of analysis and attend to cross-level interactions" (p. 181). The hierarchical social structure alone of organizational dictates scenario planners use multilevel unit analysis to describe and understand organizations as phenomena of interest. Additionally, when one considers an organization as a subperformance system embedded in a larger subperformance system context, it is clear that scenario planning is a multilevel phenomenon. Korte (2008) has explicated this organizational attribute, "Scholars of organization studies urge researchers to address the phenomenon of their research at multiple levels of analysis" (p. 181). Systems

theory (Bouling, 1956) alone informed us that there are multilevel implications for organizational inquiry.

With an explicit multilevel connection between SP and HRD, it is important to explicate the importance of multilevel theory and multilevel theory building. Klein et al. (1999) informed us that multilevel theory purports "to bridge the micro-macro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy" (p. 243). Table 5 below represents MLTB definitions, as well as the theory building method for this study, since SP is a multilevel phenomenon and HRD is a multilevel field.

Table 5 Multilevel Theory Building

Multilevel Theory	Purports "to bridge the micro-macro divide, integrating the micro domain' focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy" (Klein, et al., 1999, p. 243). Th multilevel perspective is to identify principles that enable a more integrate understanding of phenomena that unfold across levels in organizations (Kozlowski & Klein, 2000, p. 7).
Multilevel Theory Building	By definition, multilevel models are designed to bridge micro and macro perspectives, specifying relationships between phenomena at higher and a lower levels of analysis (for example, individuals and groups, groups and organizations, and so on) (Kozlowski & Klein, 2000, p. 14).

Yvonna S. Lincoln (personal correspondence, April 27, 2008) noted, "Different models of knowing elicit different research designs, which in turn create different kinds of knowledge". In other words, paradigms are guidelines for a scientific community to following in their knowledge generation skill craft. Therefore, it will be important to discuss the single-level post-positivist inquiry paradigm Chermack (2004b, 2005) utilized in

developing his SP theory and to juxtapose it against an alternative multilevel interpretivist inquiry paradigm proposed in this study. Prior to making the positivist/post-positivist research paradigm comparison of an interpretive/constructive research paradigm, we need to discuss the interpretive inquiry paradigm.

HRD and SP as Multilevel Process

Organization for the purpose of this study is recognized to be a subsystem of a larger performance system, such as a specific society in a global economy. Society represents a hierarchical context in which an organization functions as a subperformance system. It is at the boundaries of an organization where it exchanges goods or services between an organization and society. The exchange of goods and services between interacting organizations is a transaction relationship between social performance systems of a society. While there has been scholarly research on what it takes for an organization to competitively survive and thrive into the future, it should be noted that scenario planning theory in HRD (Chermack, 2004b, 2005) has been silent on multilevel aspects of scenario planning. Garavan, McGuire, and O'Donnell (2004) argued, "…there is a significant gap in the current body of HRD theory and research. This concerns the investigation of multilevel questions and the adoption of multilevel perspectives" (p. 418). Garavan et al., (2004) posited, "The HRD field is characterized by a predominance of the individual- and organizational-level contributions" (p. 418).

By their very nature, organizations are multilevel phenomena (Garavan et al., 2004; Klein et al., 1994; Kozlowski & Klein, 2000; Reynolds-Fisher, 2000; Schneider, Smith, & Sipe, 2000; Upton, 2006). Levels of analysis issues are an inherent component of

organization studies, since an organization exchanges goods/services across boundaries with other subperformance systems within a hierarchical performance system. The open systems nature of organizations explicitly requires multilevel theory to integrate micro- and macro-perspectives of an organization. Garavan et al., (2004) averred, "Despite the acknowledged benefits of multilevel research, relatively few contributions propose a multilevel conception of HRD" (p. 418).

Will HRD go by the way of management scholarship which has been criticized for not engaging in multilevel debates, due to the fact that they have limited their arguments to bifurcated states of micro and macro levels of analysis (Hitt, Beamish, Jackson, & Mathieu, 2007)? Klein, Tosi, and Cannella (1999) have reported that in organizational literature levels issues are, "… dominated by a focus on two levels of theory and analysis—individuals and organizations" (p. 247). They further argue for multilevel theory where, "the result is a deeper, richer portrait of organizational life—one that acknowledges the influences of the organizational context on individuals' actions and perceptions and the influence of individuals' action and perceptions on the organizational context" (p. 243). Klein et al. (1994) have posited, "Levels issues create particular problems when the level of theory, the level of measurement, and/or the level of statistical analysis are incongruent" (p. 198).

While an aim of multilevel theory is to bridge micro- and macro-gaps in organizational theory building, not all phenomena being studied require multiple levels of analysis. Additionally, to treat single-level phenomena as multilevel phenomena would result in misspecification errors by a theorist or researcher. Therefore, for those scholarly inquiries addressing single-level phenomena, a single level-of-analysis should be employed in theory

development, data collection and analysis. Kozlowski and Klein (2000) informed us, "Early efforts to conceptualize and study organizations as multilevel systems were based in the interactionist perspective (Lewin, 1951) and focused on the construct of organizational climate" (p. 9). Recognizing organizations are social systems, the application of multilevel considerations is an appropriate theory building method for organizational scenario planning theory building.

Connecting Theory Building Philosophy with Scenario Planning Theory Building Research

Theory building research is influenced from the researcher's basic belief system or paradigm (Denzin & Lincoln, 2008). Torraco (2002) informed us:

> Although alternative methods for theory building are available…theorists tend to pursue their work in ways that reflect their deep-seated values and assumptions about what constitutes knowledge (epistemology), the nature of being or existence (ontology), what constitutes value (axiology), and other basic ideological and philosophical beliefs (p. 356).

In this study, the phenomenon of interest served as the focal point to be understood and researched. Therefore, a metaphysical analysis of SP phenomenon are juxtaposed to research inquiry narratives with the aim of identifying an alignment between the proposed theory building philosophy and development of a theoretical research model to ground SP into. This next section is concerned with conceptual development of SP as the phenomenon of interest.

Basic Belief (Metaphysics) of Alternative Inquiry Paradigms

Conceptual development of a phenomenon of interest is an essential prerequisite to entering said phenomenon of interest into the conceptual framework of a theory (specifically when theory building follows the theory to research strategy of theory development). Dubin (1969/1978) avered, "Coming from theory to research, attention is focused on truth, the nature of reality, the process of knowing, and the logic of meaning statements" (p. 8). The alignment will be used to guide scholarly theory building and research which will then be used to inform the phenomenon of interest practice. Table 6 below summarizes the conceptual development of scenario planning phenomenon as an area of interest for this proposed study. The table below juxtaposes four inquiry paradigms representing empiricism (positivism and postpositivism) as foundational forms of inquiry, phenomenology as a nonfoundational form of inquiry, and philosophical hermeneutics as an antifoundational form of inquiry. Scenario planning for the purpose of this study is aligned within the philosophical hermeneutics (Gadamer, 1975/1965, 1976, 2006; Heidegger, 1986; Palmer, 1969) inquiry paradigm. Alignment of the scenario planning phenomenon within a philosophical hermeneutics philosophy represents man's ontological being in the world seeking a self understanding (Gadamer, 1965/1975).

Table 6 Basic Belief (Metaphysics) of Alternative Inquiry Paradigms.				
Issues	Positivism	Postpositivism	Phenomenology	Philosophical Hermeneutics
Theory of	Knowledge	Knowledge	Knowledge	Understanding
Metaphysical Classification	Foundational (Smith, 1993)	Foundational (Sm 1993)	Nonfoundational (Smith, 1993)	Antifoundational (Smith, 1993)
Ontology	Naïve—"real" reality but apprehendable (Denzin and Lincoln, 2008)	Critical realism—"real" reality but only imperfectly and probabilistically apprehendable (Denzin and Linc 2008)	Subjectivism (Gadamer, 1976); Objective hermeneu (Dowling, 2004)	Mode of man's ontological being in the world seeking a self understanding (Gadamer, 1965/1975)
Epistemology	Dualist/objectivist; findings true (Denzin and Lincoln, 2008)	Modified dualist/objectivist critical tradition/commun findings probably true (Denzin and Lincoln, 2008)	Phenomenological method points towa subjectivity within life-world (Gadam 1976)	Neither objectivist nor subjectivist, but a mode of being in the world (Gadamer, 1965/1975)
Methodology	Experimental/manipulative; verification of hypotheses; chiefly quantitative methods (Denzin and Lincoln, 2008)	Modified experimental/man lative; critical multiplism; falsification of hypotheses; may include qualitative methods (Denzin Lincoln, 2008)	Four-step phenomenological method: Epoché, phenomenological reduction, eidetic variation, Intersubjective corroboration (Gallagher and Zahavi, 2008, p. 28	Hermeneutical, Dialectical

Source: Lincoln & Guba, 2000, p. 168.

Summary Of Dubin's Applied Theory Building Framework

Dubin (1969/1978) put forth in his book titled, *Theory Building*, "The purpose of this study is to maximize the congruence between scientist's science and the philosopher's science" (p. 3). Dubin (1969/1978) has posited the relevance of theory building in this manner, "Theories in social and human behavior address themselves to

two distinct goals of science: (1) prediction and (2) understanding. It will be argued that these are separate goals and that the structure of theories employed to achieve each is unique" (p. 9). In the use of the term prediction, Dubin (1969/1978) means, "…(1) that we can foretell the value of one or more units making up a system; or (2) that we can anticipate the condition or state of a system as a whole. In both instances the focus of attention is upon an *outcome*" (p. 10). Prediction is an analytic focused on the "what" and the "when" of a model in order to achieve theoretical model outcomes. In the use of the term understanding, Dubin (1969/1978) means, "…it is knowledge about the *interaction* of units in a system. Here attention is focused on processes of interaction among variables in a system" (p. 10). Understanding is an analytical focus on "how" and the "why" of a theoretical model in order to understand the interactive processes at work. A difficulty for this study in using Dubin's theory building model is centered in the research operation side of Dubin's model. The second phase (steps 5 through 8) of Dubin's eight stage model of theory building was designed to generate objective knowledge, specifically when operationalized with frequency measuring tactics. Therefore, the research operation side of Dubin's theory building model is considered inappropriate to this interpretive inquiry which has an analytical focus in the nature of being. Ermarth (1978) informed us, "…the positivist and empiricist tried to restrict their inquiry to questions concerning knowledge, rather than the nature of being" (p. 68).

Critique of Chermack's Theory of Scenario Planning

What is a relevant conceptual framework for SP theory building? To date, there has been one theory of scenario planning put forth and that by Thomas Chermack

(2004b) with the resultant theory being noted as a contribution to scenario planning theory building. However, Chermack (2004b) created a misspecification error of analysis by treating SP phenomenon as a single-level phenomenon of interest when, in fact, the phenomenon is multilevel in nature. Additionally, Chermack grounded his theory of SP in Dubin's (1969/1978) eight-step theory building method for applied disciplines. The first five steps of Dubin's theory represent the conceptual framework of his theoretical model (units, laws of interaction, boundaries, system states, and propositions) and may be considered applicable to interdisciplinary inquiries (Holton & Lowe, 2007). Dubin's model of theory building promotes objective knowledge generation as evidenced in steps 6 through 8 (empirical indicators, hypotheses and testing) of his theory building model which represents the operational side of the theory-building cycle (Holton & Lowe, 2007). Following Dubin's theoretical model, Chermack operationalized his theory of SP by a set of methodology tactics that dealt with frequency rather that meaning. A methodology other than quantitative research is needed to achieve human sciences outcomes of sensemaking or understanding meaning from the scenario planning participant's perspective. Dubin's model of theory building not only defined but is constrained to the objectivist scientific method due to the manner in which he designed the operational side of the theory-research cycle.

Chermack's (2004b) theory of SP followed Dubin's model of theory building for applied disciplines. The resultant SP theory generates objective knowledge, because in adhering to Dubin's operation side of the theory-research cycle in steps 5 through 7 (propositions, empirical indicators and hypotheses) Chermack proposed using quantitative

method resulting in generalizable laws of nature. Chermack's choice of research method reinforced a rationalist view of reality consistent with a post-positivist epistemology. Dubin's empirical analytic approach is integrated by Chermack through the operationalization of Dubin's theory building model with quantitative research data collection and analysis techniques designed for hypotheses testing. The derived test results are aimed toward the production of an empirically verified and trustworthy theory with test results that are objective, valid and reliable contributing to a theory of knowledge. A second characteristic of Chermack's theory of SP is its single-level representation of scenario planning phenomena which serves as an area of interest for theory building in this study. Had Chermack developed a philosophical underpinning of the phenomenon of interest prior to entering the conceptual framework of theory building, misspecification errors regarding data collection and analysis using quantitative research methods, as well as inattention to levels issues of SP phenomena, could have been taken into consideration in his theory development process.

Positivistic/Post-positivist vs. Interpretivist/Constructivist

Schwandt (2001) defined interpretive social science as, "…signal[ing] a fundamental difference between the two sciences: The natural sciences explain the behavior of natural phenomena in terms of causes, and the human sciences interpret or understand the meaning of social ***action***" (p. 133). Regarding the concept of interpreting or understanding from a macro perspective we turn to an authority from sociology, Weber (1947) used the German term *Verstehen* when discussing understanding. In Henderson and Parsons' translation of Max Weber they argued, "Its primary reference in this work is to be the observation and

theoretical interpretation of the subjective 'state of mind' of actors" (p. 87). From an anthropological perspective Geertz (1973) in his publication titled *The Interpretation of Cultures* posited, "Their world view is their picture of the way things in sheer actuality are, their concept of nature, of self, or society. It contains their most comprehensive ideas of order" (p. 127). Geertz (1973) quoted Max Weber on humans' ability to construct images of reality, "events are not just there and happen, but they have a meaning and happen because of that meaning" (p. 131). While anthropological writings are themselves interpretations, they are interpretation of a second and third order (Geertz, 1973) and are therefore not the most relevant to scenario planning theory building. The most relevant interpretations for scenario planning theory building will be first order interpretations provided directly from scenario planning participants situated within their own culture.

Dubin (1969/1978) stated a recognition that his theoretical model could not achieve *verstehen* (understanding) of a given phenomena,

> It will be recognized that this is not the same as *verstehen* sociology whose essential feature is the claim that the observer, being identical with his subjects, is able to 'take the role of the other' (think, act and feel like) when analyzing social phenomena, and hence can understand from the standpoint of the subjects being studied (p. 10).

Needless to say, if Dubin's theory building model is incapable of amplifying *verstehen,* then Chermack's post-positivist single-level SP theory is incapable of such contributions to *verstehen* as related to the scenario planning phenomenon.

Why interpretive/constructivist inquiry? To better understand scholarly inquiry oriented toward interpretive outcomes we turn to Denzin and Lincoln (2008) who have posited, "All research is interpretive; it is guided by a set of beliefs and feelings about the world and how it should be understood and studied" (p. 19). For example, hermeneutics is the science of interpretation. Interpretive research in SP is informed, in part, by informant world-views. Wack (1985b) explained scenario planning participant worldview in this manner, "We now wanted to design scenarios so that managers would question their own model of reality and change it when necessary, so as to come up with strategic insights beyond their minds' previous reach" (p. 84). The meaning-structure termed "*world-view*" was also developed by Dilthey according to Ermarth (1978), "This world-view is a combination of reflective, conscious awareness and pre-reflective interests and practical concerns. It relates one's own inner awareness to the world at large. The world-view is a meaning-structure which gives coherence to the individual's ongoing experience" (p. 119). Ermarth (1978) informed us, "…the positivist and empiricist tried to restrict their inquiry to questions concerning knowledge, rather than the nature of being" (p. 68). The theory-building research method (Dubin's 1969/1978, 1976; Storberg-Walker, 2003) Chermack (2004b) used to develop a single-level, positivist/post-positivist theory of SP was limited to objective knowledge, since Chermack utilized quantitative (Keough & Shanahan, 2008) research techniques to operationalize the theory. Instead of developing objective knowledge, what is needed is *verstehen* (interpretive understanding) of scenario planning phenomena. The notion that SP is an entirely a small group discursive process is advanced in this study and, therefore, theory building should be framed by theory building philosophy that aligns

with such an interpretive vantage point. In addition to needing an interpretive understanding of SP phenomenon, a multilevel perspective is needed to fully appreciate the levels issues within and between subperformance systems.

Statement of the Problem

Current SP theory is limited due to the post-positivist inquiry paradigm used in generating the SP theory which resulted in objective knowledge when SP phenomenon is a human, as well as socially orientated phenomenon. Empiricism in general, and more specifically post-positivistic empirical analytic approaches to theory and theory building, is insufficient for developing meaningful social scientific theory and, in the case of SP, are inadequate for developing applied theoretical frameworks. Madison (1988) made this case, "Indeed, the proper object of the social sciences are not *facts*, in the scientific-positivistic sense of the term, but *interpretations,* the various means by which human being achieve for themselves an understanding of what it means for them to be" (p. 50). The realist ontology and post-positivist epistemology were presumably suited for a theory of knowledge with scientific pursuits directed at objective truths and universal laws of nature. By establishing the foundational awareness that empiricists pursue a theory of knowledge and not a theory of understanding, it is sufficiently clear objective knowledge generated from post-positivist empirical analytic epistemology will not generate knowledge directly contributing to an ontological mode of being occurring in the life world directed at achieving a self-understanding of There-being in the world. Therefore, it is concluded Chermack (2004b) uncritically applied an empirical analytic project and its associated epistemology to scenario planning theory building.

Additionally, the theory is limited due to its predominant focus on the organization level of analysis and SP scholars are beginning to recognize SP as a subperformance system nested in a larger subperformance system context presenting multilevel implications for theory building. As a result, HRD scholars are calling for multilevel theories. Theory building in HRD has long been focused on a single level of interest, primarily the individual or organizational level, and HRD scholars are beginning to recognize the importance of multilevel exploration (Garavan et al., 2004). Despite this overt recognition, there has been little multilevel theory and theory development research published in HRD. Treating the phenomenon of SP as a single-level entity is a misspecification error, because the current SP theory treats the phenomenon of SP as a single level entity while, in fact, it is a multilevel phenomenon. Attention in needed in the conceptual framework of the theory in order to address this type of misspecification error in theory building. Recognizing the limitations cited above as problems, this study aims to address these issues by providing a possible solution for both SP and HRD scholars while further connecting the two fields in theory and practice.

Purpose of the Study

With the foregoing issues in mind, the proposed study will fill multiple theory building gaps within the HRD field and, more broadly, across applied social sciences. First, instead of an uncritical application of theory of knowledge metaphysics found in Western thought being applied toward human sciences in general, and more specifically a post-positivist (foundational) epistemology in a social phenomenon such as scenario planning; this study advocates for a philosophical hermeneutics (antifoundational) epistemology

contributing to the theory of understanding from arguments originating in European thought in general and, more specifically, argues for a theory of understanding—particularly as it pertains to SP as the phenomenon of interest. Second the proposed study is related to the need to explicate a multilevel theory of SP phenomenon. Since MLTB can be used to bridge the theoretical gap between organizations as hierarchical social subperformance systems nested within a larger social subperformance context, this approach to theory building provides an opportunity for HRD professionals to address goals important to both social subperformance systems. The purpose of this study is to develop *An Interpretive Multilevel Theory of Organization Scenario Planning* to fill these gaps.

Based on the SP and HRD interests, the threefold purpose of this study is to develop an interpretive multilevel theory of SP as a means of strengthening the theoretical connection between SP and HRD, advancing HRD theory building, and contributing to meaningful SP theory building. To accomplish these purposes, the following task need to be addressed: (1) conceptual development of the phenomenon of interest prior to entering the theory-research-development-practice cycle (Swanson, 1997); (2) develop a multilevel perspective that expands the vision of scenario planning scholars beyond the traditional intralevel view of their discipline; (3) modify the post-positivist theory building model developed by Dubin (1969/1978) in order to resolve foundational issues associated with theory building beyond the post-positivistic paradigm creating space for multilevel theory specification, operationalization guidelines that accommodating interpretive evaluation; (4) to create a platform for debate and theoretical exploration that will advance the study of scenario

planning across disciplines; and (5) to create an interpretive outcome model that will inspire researchers to test its interpretive understanding (*verstehen*) capacity.

In laying the foundation for this theory building study, two fundamental questions must be answered: (1) What theory of understanding criteria (Denzin & Lincoln, 2008; Lincoln & Lynham, 2011) characterize interpretivist research traits applicable to scenario planning phenomenon and (2) How are organization scenario planning phenomenon level issues to be defined? In 2004, Rowland informed us, "The design tradition answers epistemological questions differently, and in ways that could be useful to organizations, giving attention to knowledge, knowing and learning" (p. 41). The epistemology (or way of knowing) in this study is different that extant SP theory generated by Chermack (2004b). Therefore, just as this study's theoretical research design is different from Chermack's theoretical research model of SP, it is anticipated the empirical research models will be different too. Treating different way of knowing with different criteria for judging theoretical model quality (Lincoln, 1995, Lincoln & Lynham, 2011) will account for differences between the two studies empirical research models. The above stated research questions represent turning points between judging single-level, post-positivist theoretical model of SP and multilevel theoretical model of SP with interpretive outcomes. Recalling that Chermack's (2004b) SP theory utilized criteria from the post-positivist tradition, this study will need to specify criteria applicable to an interpretivist research project. Since the design for this study is concerned with a MLT of SP with interpretive outcomes, specify how to judge the quality of the proposed theory building model, as well as interpretive outcomes reached by SP participants using the theoretical model of SP are areas of interest. Likewise,

the study must specify the focal unit of analysis, because multilevel models must account for collective constructs (or theoretical units) relationships which may apply at two or more levels (Rousseau, 1985).

Research Process and Methodology

This study advances theory building as the process of modeling real-world phenomena (Torraco, 1997) and uses a theory-to-research (Lynham, 2002b) strategy in the theory building process. The resultant theoretical model represents deductive arguments to applied theory building. In this study, theorizing consisted of three theoretical components intrinsically linked together which constituted the overarching theory building framework for this study. The first theory building component is represented as theory building philosophy sequentially followed by two components of theoretical research: theoretical research and empirical research. The theory building philosophy, philosophical hermeneutic philosophy, was viewed as the primary driver informing the two research components. Locating SP phenomenon within a conceptual inquiry paradigm assisted the theorist in grounding SP theory building ensuring interpretive *verstehen* outcomes of the resultant model could be achieved. Grounding SP in an antifoundational inquiry paradigm contributed to a theory of understanding where the researcher needed to account for conjectural knowledge generated by SP participants during small group experiential learning sessions. Scenario planning in the philosophical hermeneutic tradition contributed to a theory informed by the ontological self-understanding nature of the phenomenon of interest.

After explicating the study's theory building philosophy, the researcher was prepared to enter the theory-research-development-practice cycle (Swanson, 1997) at the theory building point-

of-entry. Accompanying the theory building philosophy component, the applied theory building framework included Dubin's (1969/1978) theoretical research model components known as theoretical research (meaning theory building) and empirical research (meaning theory testing). Theoretical research component consisted of Dubin's (1969/1978) iterative elements of theory building (units of a theory, laws of interaction, boundaries, and system states), and the empirical research component will consist of propositions, empirical indicators, hypotheses, and testing). This study, advances basic (or theoretical) knowledge of SP contributing to a theory of understanding and stands juxtaposed to Chermack's (2004b) theory of SP which contributed to a theory of objective knowledge.

The methodology for MLTB utilized in this study was preceded by recognition that HRD, SP, and organizations are multilevel phenomena. Once inside the theory-research-development-practice cycle (Swanson, 1997) theoretical research preceded using MLTB methodology developed in this study. The resultant multilevel theory development served as the guiding research method for the study. Regarding the study's research process, asking whether a multilevel theory of SP can be developed seemed unnecessary as this study progressed to the point that an improved MLTB process was used to develop a multilevel theory of scenario planning. By describing steps taken to develop a theoretical MLTB model in the next paragraph, the research method undertaken to ground scenario planning phenomenon in the resultant MLTB model will become clearer.

With an eye toward data collection and analysis within and between units of a theory, Dubin's (1969/1978) hypothetical-deductive theoretical research framework was refined to include "collective constructs" (Morgeson & Hofmann, 1999) as units of theory. Specifying

collective constructs as theory building units in the theoretical research model meant a researcher could then accounted for bidirectional behavior and social action occurring within and between collectivities viewed as social subperformance systems functioning in a larger social performance system. Specifying guidelines for collective MLTB constructs enables the capture of downward directed contextual influences, as well as bottom-up emergence occurring in collectivities (Morgeson & Hofmann, 1999). After specifying collective constructs as theoretical units, Kozlowski and Klein's (2000) MLTB principles were incorporated into Dubin's (1969/1978) theoretical research and empirical research models. The resultant applied theoretical MLTB model was then fully specified and readied to ground SP as the phenomenon of interest into the comprehensive MLTB model.

During this theory building study consideration was also given to operationalizing the resulting MLTB model using two qualitative research methods in the same study: cognitive mapping (Axelrod, 1976; Chauvin, Genest, & Loiseau, 2009; Eden, 1988, 2004; Jenkins, 1988; Laukkanen, 1990; Weick & Bougon, 1986, 1992) and grounded theory methodology (Charmaz, 2000; Dey, 1999; Egan, 2002; Glasser & Strauss, 1967; Strauss & Corbin, 1998). Cognitive mapping is a qualitative research approach used to elicit personal constructs meaning or idiosyncratic maps of SP participants (level of analysis) (Jenkins, 1988). Whereas, grounded theory methodology is an inductive theory building epistemology, but does not directly address personal constructs of SP participants which is critical in SP theory. Grounded theory methodology also has a reputation for being strong on theory development, but also known to be weak in theory testing. A comprehensive approach to theoretical

research and empirical research needed to include both cognitive mapping during focus groups and grounded theory methodology generating inductive theory.

The methodology for creating a multilevel theoretical model utilized in this study was the result of systematic analysis, critique and refinement to Dubin's (1969/1978) extant single-level, post-positivist theoretical research model, coupled with integration of Morgeson and Hoffman's (1999) guidelines for collective MLTB constructs, and Kozlowski and Klein's (2000) MLTB principles. Additionally, the empirical research or theory testing specified two qualitative research methods ensuring first-person and collectivity data collection and analysis advanced interpretive research model outcomes. Although the end result of this proposed study is a multilevel theory of SP, the process for building the theory in Chapters III and IV is an innovation process for building multilevel theory that modifies earlier empiricist theory building model and advances an interpretive MLTB process and advances theory building in HRD.

Scope and Limitations

The analytical focus of this study is limited to developing a multilevel theory of SP with interpretive outcomes by careful analysis and refinement of Dubin's (1969/1978) extant single-level, post-positivist theoretical research model, coupled with integration of Morgeson and Hoffman's (1999) guidelines for collective MLTB constructs, and Kozlowski and Klein's (2000) MLTB principles. While delineating between a post-positivist and an interpretive MLTB model it will be necessary to replace elements of the model that produce objective knowledge with theory elements that generate interpretive knowledge. Additionally, criteria for judging theory quality will need to be examined and refined to

evaluate interpretive theory outcomes. Limiting the scope of the current study to theory-building still requires the author to deal with conceptual development of the phenomenon of interest, conceptual development of the theory framework, conceptual development of theory research operation, and criteria to evaluate the resulting interpretive theory of scenario planning phenomenon. Development of universal indicators and evaluation criteria for testing the MLTB model can be accomplished in this study. However, it should be noted that development of universal indicators and evaluation criteria for testing SP inquiry conducted by SP participants using the theoretical MLTB model is not feasible at this time, since their theory building is not concerned with an historical matrix or framework, but will be concerned with generating local, practical reasoning contributing to a real world strategy problem of their sponsoring organization. With that said criteria for evaluating the quality of scenario planning research has previously been advanced by Wilson (2000) and can be applied to SP theory building conducted by SP participants using the proposed MLTB model of SP in the development of their SP theory.

This study intentionally stops short of operationalizing the constructs of the theory. Although testing of the resulting multilevel theory is beyond the scope of this study, the results of the study will include improved MLTB process and a multilevel theory of SP—both of which can be tested and refined in future research. However, every effort has been made to create a list of interpretive criterion by which to judge scenario planning theory generated by the model. Finally, situating this multilevel theory of SP at the organizational level of a subperformance system may prevent the organization's leadership from valuing the utility of other levels issues within such as theory. Therefore, obscuring or not revealing

ontological reality within and between subperformance system levels of the phenomenon of interest that are relevant HRD theory and practice and failing to bridge the micro-macro divide.

Significance of the Study

This study contributes to the recognition that empiricism is directed toward a theory of objective knowledge and not interpretive understanding leading to a theory of understanding. Secondly, by decoupling scenario planning from empiricism and more specifically postpositivism, scenario planning theory building may proceed toward developing an interpretive multilevel theory of scenario planning contributing to human beings achieving for themselves a self-understanding of their being in the world. First order *verstehen* of scenario planning phenomenon will assist scenario planning theorists, researchers and practitioners better understand scenario planning phenomena. Third, by viewing organizations as subperformance systems within a larger subperformance context, levels (both internal and external) issues become identifiable as inherent elements of organizations as performance system. Fourth, proposing a list of interpretive theory evaluation criteria (Denzin & Lincoln, 2008; Lincoln & Lynham, 2007; Wilson, 1998) will contribute to evaluating a theory of scenario planning, contributing to a theory of understanding. Developing multilevel theories of SP will provide an organizing framework that more accurately reflects the multilevel dynamics associated with current day SP. This dissertation introduces an interpretive MLTB process and multilevel SP theory in the context of HRD.

Operational Definitions

Antifoundational - "*Antifoundational* is the term used to denote a refusal to adopt any permanent, unvarying (or 'foundational') standards by which truth can be universally known" (Lincoln & Guba, 2000, p. 177).

Collective Construct - "...[T]he structure of any given collective (e.g., a work team) can be viewed as a series of ongoings, events, and event cycles between component parts (e.g. individuals)…the collective action (which is composed of ongoings and events) [then] enables collective phenomena to emerge. Labels then can be affixed to this phenomenon, resulting in what could be termed the emergence of a collective construct" (Morgeson & Hofmann, 1999, p. 252).

Contextualist Theory of Meaning - "The meaning of any phenomenon or proposition depends on the 'whole' of which it is a 'part' or, in other words, it depends on the 'context' in which it has a 'function'" (Wachterhauser, 1986, p. 12).

Criteria - "Criteria are standards, benchmarks, norms, and in some cases regulative ideals that guide judgments about the goodness, quality, validity, truthfulness, and so forth of competing claims (methodologies, theories, interpretations, etc.)" (Schwandt, 2001, p. 42).

Endogeneous Construct - "The endogeneous construct, or dependent variable, drives the levels, constructs, and linking processes to be addressed by the theory" (Kozlowski & Klein, 2000, p. 12). Combining dictionary definitions for each word separately reveals that an endogeneous construct is "a concept, model, or schematic idea" that is "produced…from within" the phenomenon of interest (Dictionary.com, 2005).

Epistemology - "This is the study of the nature of knowledge and justification…Epistemologies provide much of the justification for particular methodologies (i.e., the aim, function, and assumptions of method)" (Schwandt, 2001, p. 71).

Entrainment - "Entrainment can tightly couple phenomena that ordinarily are only loosely connected across levels. Theories that address entrained phenomena must specify appropriate time cycles and must employ those cycles to structure research designs" (Kozlowski & Klein, 2000, p. 25).

Hermeneutic Circle - "The hermeneutic circle involves the 'contextualist' claim that the 'parts' of some larger reality can be understood only in terms of the 'whole' of that reality, and the 'whole' of that reality can be understood only in terms of its parts" (Wachterhauser, 1986, p. 23).

Hermeneutic Phenomenology - The first is eidetic or descriptive phenomenology guided by the work of Husserl, which aims to obtain fundamental knowledge of phenomena and has a strong psychological orientation (Maggs-Rapport, 2001). The second school of phenomenology, hermeneutics, has as its aim the interpretation of phenomena to uncover hidden meanings, and is guided by the work of Heidegger. Heidegger is accredited with developing hermeneutics in order to clarify under what conditions understanding occurs for the purposes of ontology. (Dowling, 2004, p. 32)

Human Resource Development (HRD) - HRD is the process of developing and/or enabling human expertise and potential through career and lifelong learning, training and development, and organization development for the purpose of improving individual and organizational learning and performance (HRD Faculty, Texas A&M University).

Micro - Refers to the individual and group level of interaction and analysis (Klein et al., 1999).

Macro -Refers to the organization, environments, and strategy level of interaction and analysis (Klein et al., 1999).

Metaphysics - This is the study of reality, of being, of the real nature of whatever is, and of first principles. Sometimes called ontology (although some philosophers define ontology as a branch of metaphysics), it is concerned with understanding the kinds of things that constitute the world" (Schwandt, 2001, p. 157).

Multilevel Theory - Theory purporting "to bridge the micro-macro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy" (Klein et al., 1999, p. 243).

Multilevel Theory Building (MLTB) - "The multilevel perspective is to identify principles that enable a more integrated understanding of phenomena that unfold across levels in organizations" (Kozlowski & Klein, 2000, p. 7). "Theory that begins to bridge the micro-macro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy" (Klein et al., 1999, p. 243).

Organization - "An organization is: a theory of action, a cognitive enterprise undertaken by individual members, a cognitive artifact made up of individual images and public maps" (Argyris & Schön, 1978, p. 12). Parsons (1951) also informed us of what an organization is not, "but for the theory of action the organism is not a system, but a *unit point of reference*" (p. 542).

Organization Learning - But in order for organizational learning to occur, learning agents' discoveries, inventions, and evaluations must be embedded in organizational memory. They must be encoded in the individual images and shared maps of organizational theory-in-use from which individual members will subsequently act. If this encoding does not occur, individuals will have learned but the organization will not have done so (Argyris & Schön, 1978, p.19).

Organization as Performance System - An organization is a system which, as the attainment of its goal, 'produces' an identifiable something which can be utilized in some way by another system; that is, the output of the organization is, for some other system, an input….In any of these cases there must be a set of consequences of the processes which go on within an organization, which make a difference to the functioning of some other subsystem of the society; that is, without the production of certain goods the consuming unit must behave differently, i.e., suffer a 'deprivation'. (Parsons, 1960, p.17)

Philosophical Hermeneutics - Always an historical, dialectical, linguistic event…Understanding is conceived not in the traditional way as an act of human subjectivity but as the basic way of [our] being in the world. The keys to understanding are not manipulation and control but participation and openness, not knowledge but experience, not methodology but dialectic….The purpose of hermeneutics is not to put forward rules for "objectively valid" understanding but to conceive of understanding itself as comprehensively as possible…[Hermeneutics] is concerned not so much with understanding more correctly (and thus with providing norms for valid interpretation) as with understanding more deeply, more truly. (Palmer, 1969, p. 215)

Research-to-theory - "Deriving the laws of nature from a careful examination of all the available data" (Reynolds, 1971, p. 140).

Scenarios - External scenarios are derived from shared and agreed upon mental models of the external world. They are created as internally consistent and challenging descriptions of possible futures (van der Heijden, 1996, p. 5).

Internal scenarios belong to a person and relate to his/her anticipation of future states of the interactional world, as it relates to the "self". They are less complete but are almost by definition internally consistent. An internal scenario is a causal line of argument, linking an action option with a goal…." (van der Heijden, 1996, p. 5)

"Scenarios are also vehicles for exploring the emergent nature of the contextual environment and its impact on organizational strategy" (Chermack & Swanson, 2008, p. 133).

Scenario Planning (SP) - "Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance". (Chermack & Lynham, 2002, p. 376).

Theory - "A theory is a statement of relations among concepts within a set of boundary assumptions and constraints" (Bacharach, 1989, p. 496).

*Theory Buil*ding - "Coming from theory to research, attention is focused on truth, the nature of reality, the process of knowing, and the logic of meaning statements" (Dubin, 1969/1978, p. 8).

Theory-to-research - "In this approach to theory building, theory is made explicit through the continuous, reiterative interaction between theory construction and empirical inquiry" (Lynham, 2002, p. 227).

Understanding - "Understanding is not a matter of the subject appropriating the meaning of an object through the proper application of the proper methods, but a dialogical process between the self-understanding person and what is encountered—be it a text, work of art, or the meaningful behavior of another person" (Smith, 1989, p. 155).

Content of Dissertation

This dissertation is assembled into five chapters. Chapter I contains an introduction and purpose for the topic studied. In Chapter II, literature is provided to offer the reader content and background of the type of research that has already been conducted as well as new opportunities for further research. In Chapter III, the methodology of this study is streamlined. The parameters are laid out to specifically provide details on how the analysis was performed, concluded, and presented. Next, in Chapter IV, the theory of scenario planning is critically reviewed to provide explanation of its relevance for HRD is presented. Finally, Chapter V is concluded with recommendations of the research study to open discussion for future studies.

CHAPTER II

REVIEW OF THE LITERATURE

Scenario planning emerged from war games used in the U.S. military (Bradfield et al., 2005; van der Heijden, 1996). Bradfield et al. (2005) stated, "Modern day scenario techniques however, only emerged in the post-war period, and the 1960s saw the emergence of two geographical centres in the development of scenario techniques, the USA and France" (p. 797). Bradfield et al. (2005) informed us of scenario planning in Europe:

In Europe meanwhile, the French are reputed to have been the first to have systematically studied the "scientific and political foundations of the future" using scenario techniques, and as in the U.S., the pioneering scenario work as almost exclusively associated with public policy and planning. At the same time Khan was developing scenarios for the military in the 1950s (pp. 801-802).

Not unlike the military's use of scenario planning, scenario planning techniques were employed in public policy making and later in corporate America as a potential business leverage point or to at least prevent paralysis of key decision makers regarding corporate strategy (Peterson, Cummings, & Carpenter, 2003; Shoemaker, 1995; van der Heijden, 1996).

For van der Heijden (1996) in his book titled "*Scenarios: The Art of the Strategic Conversation*" wrote, "…the ultimate purpose of the scenario planner is to create a more adaptive organization which recognises change and uncertainty, and uses it to its advantage" (p. 13). While the quality of being adaptive is viewed as an ultimate purpose of scenario planning, Peterson et al. (2003) warned that, "… the biggest traps of scenario planning are

the inability of participants to perceive their own assumptions (Keepin & Wynne) and the potential consequences of being wrong" (p. 365). Godet and Roubelat (2000) report, "Since the sixties, scenarios have become a major concept and methodology in futures research" (p. 1). Bradfield et al. (2005) discovered, "…literature reveals an abundance of different and at time contradictory definitions, characteristics, principles and methodological ideas about scenarios" (p. 795). Godet (2000) posited, "Somewhat surprisingly, there is no single approach regarding scenarios" (p. 11). Godet also uniquely reported, "Unfortunately, there are no statistics for the future, and often personal judgement is the only information available to deal with the unknown" (p. 7).

Although scenario planning connections are implicit in Human Resource Development (HRD) practice and practice literature, as well as explicitly cited in the HRD strategic agenda (Swanson & Holton, 2009); research and theory linking scenario planning and HRD is limited. HRD approaches and processes have been examined in terms of implementation of necessary steps to achieve a HRD-related outcome, but scenario planning theory building has been rarely explored. As a community we have spent a lot of time examining organization performance improvement or the impact of efficient or inefficient execution of HRD interventions themselves on desired outcomes. Chermack (2004a) informs us, "The opportunity to own this potentially strategic tool is and has been staring HRD professionals in the face, yet little has been done to take advantage of this situation" (p. 117). Contrary to the limited accessibility of related literature, anecdotal evidence from HRD practice and support from HRD scholars with scenario planning theory contributions (Bradfield, 2008; Chermack, 2002, 2003a, 2004a, 2004b, 2004c, 2005; Chermack & van der

Merwe, 2003; Egan, 2002; Goodwin & Wright, 2001; Ratcliffe, 2003; Swanson & Holton, 2009) suggest investigation of scenario planning theory building in HRD to be of importance for HRD implementation, learning, and performance.

Problem Statement

The examination of HRD-scenario planning connections emphasizes two contexts—scholarly literature exploring HRD—related areas with explicit connections to scenario planning and the scholarly scenario planning literature outside the HRD discipline that has implications for HRD-scenario planning. While practice advanced well ahead of theory during the mid-1900s, scenario planning practice has also steadily progressed during the past few decades. As the importance of scenario planning has emerged, terms such as scenario technique, scenario construction, and organizational learning have become associated with scenario planning. Although scenario planning has been proposed as supporting HRD practitioners and organizations, the absence of research and theory associated with scenario planning—HRD connections means that we have little understanding regarding scenario planning practices in HRD contexts. This lack of research leaves open questions as to how scenario planning is and can be approached by HRD contexts, the types of systematic approaches to scenario planning that are actually used in HRD implementation, and what approaches are effective or ineffective.

Purpose and Central Questions

Based upon both the practical and scholarly significance of scenario planning and HRD intersections, two central purposes for the investigation were formulated. First, a deep, rich, thick understanding of the landscape of literature that overtly examined HRD—scenario

planning connections were desired. Secondly, because the scenario planning community produces scenario planning literature outside of the HRD discipline, the search was broadened to include scholarly literature outside of the HRD discipline. Specific questions were: (a) what scholarly literature currently exists integrating scenario planning and HRD? (b) what scholarly literature focused on scenario planning exists outside the HRD discipline? (c) what are the themes that surface from the overall literature identified in a and b above? (d) what implications may exist at the intersection of the identified literature for HRD and for future scenario planning—HRD theory building research?

Method

The literature review, analysis, and synthesis accomplished the purposes of this study. To enact the purpose identified, two systematic reviews of literature were conducted. The first search of literature involved connections between HRD and scenario planning theory and the second search regarded scenario planning literature inquiring outside of the HRD specific literature. Articles identified in the search of HRD-related journals were selected based on their connections to scenario planning, scenario planning theory building, and scenario planning research or related areas.

Search for Articles Focusing on Scenario Planning and HRD Connections

Based on the purpose and focus questions, refereed journal articles and scenario planning seminal works were reviewed informing this study. Literature identification process for selection of articles focused on using subject/keywords of HRD and scenario planning in the electronic database titled *Emerald*. The search for scenario planning theory produced 21 HRD-related journal articles in November 2008. The first search highlighted scenario

planning theory, work published by Thomas Chermack (2004b) reflecting the single theory developed to date connecting scenario planning theory to HRD theory.

Search for Articles Focusing on Scenario Planning Outside HRD Literature

The method used to inform the second literature review involved accessing scholarly literature available through *Emerald* electronic database during November 2008 returning 174 articles responding to key words: scenario planning, theory and research. Additional electronic databases included in the search were: Academic Search Complete (EBSCO), Business Source Complete (EBSCO), CAB Abstracts (Ovid), ERIC (EBSCO), PsycINFO (CSA), Science Direct and Web of Science (ISI). Additionally, individual electronic journals searched using the identical combinations of key words were as follows: (a) *Academy of Human Resource Development* in November 2008 returning 5 articles, (b) *Futures Research Quarterly* in November 2008 returning 5 articles, (c) *Harvard Business Review* in November 2008 returning 3 articles, (d) *Human Resource Development International* in November 2008 returning 1 articles, (e) *Human Resource Development Review* in November 2008 returning 4 articles, (f) *Journal of Forecasting* in November 2008 returning 2 articles, (g) *Journal of Multi-Criteria Decision Analysis* in November 2008 returning 2 articles, (h) *Long Range Planning* in November 2008 returning 49 articles, and (i) *Technological Forecasting and Social Change* in November 2008 returning 1 articles. Each search was conducted using search criteria of scenario planning, theory, research contained in the keywords field. These searches conducted through several large search engines at a major university in the United States, yielded a total of 267 resources. As a result, the predominantly available literature used to inform this study comes from the United States and Europe, which may serve to limit

the study. Articles were screened according to relevance for the purpose of this study. Only refereed journals and seminal works in scenario planning were considered. For example, book reviews and editorials were not included in the final resource pool of 227 articles. The final selection criterion was whether the article contained an explicit reference to scenario planning, scenario planning theory building or scenario planning research. The 227 remaining resources were examined for their definitions and implicit and explicit outcome variables. The remaining methodology of this study will follow the purported system of interacting components of thought and practice espoused by Ruona and Lynham (2004), building on the explicit assumption of making sense of organizations.

Scenario Planning Overview

Scenario planning has been viewed by scenario planning practitioners as a system (Mintzberg, 1994a, 1994b; Porter, 1985; Ringland, 1998; Wack, 1985a). Additionally, scenario planning has been interpreted as a process of positing multiple alternative futures and their future implications informed by a historical situated past (Porter, 1985; Ringland, 1998; Schwartz, 1991; Shoemaker, 1995). After conducting a scholarly review of scenario planning literature Chermack and Lynham (2002) offer the following integrative definition of scenario planning:

Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance (p. 376).

For the purpose of this paper, Chermack and Lynham's definition of scenario planning will be utilized as a way of viewing scenario planning phenomenon. Therefore, the established scholarly definition of scenario planning will serve as a theory building stepping stone (Swanson & Holton, 2009) for this scholarly research journey. However, even with a definition of scenario planning, we can run into difficulties in the context of scenario planning theory deficiencies.

Summary of Literature

Burt and Chermack (2008) argue for bringing together academics and practitioners in their discussion of theory, research and practice of scenario planning. According to Goodwin and Wright (2001), "Scenario planning has been developed by practitioners and, as such, lacks the theoretical and axiomatic underpinning of other decision-aiding tools, such as decision analysis and statistical forecasting" (p. 2). Chermack (2004b) suggested, "The scenario planning literature reveals a gap regarding its research and theory development" (p. 59). With only one scholarly theory on scenario planning, an alternate paradigm with its associated research strategies and methodologies will be explored. Specifically, we will look at the constructivism-interpretivism paradigm using cognitive mapping research and grounded theory methodology to generate a multilevel theory of scenario planning.

A review of scholarly articles outside of the HRD discipline included research that was related to broad areas of theoretical paradigms and perspectives. A thematic review of literature noting scenario planning and HRD connections included articles divided into several sections, particularly (a) general considerations of theory and theory building research, (b) HRD and HRD theory, (c) state of scenario planning and scenario planning

theory, (d) linking scenario planning and HRD theory and practice, (e) multilevel theory building (MLTB), and (f) cognitive mapping research, and (g) grounded theory methodology. These sections summarize each of the systematically selected articles for scenario planning and HRD literature connections.

General Considerations of Theory and Theory Building Research

A journal article written by Torraco and Holton (2002) titled "*A Theorist's Toolbox*" provided insightful resources for the beginning theorist in identification of, "criteria for evaluating theory, definitions of key terms, and a reading list of seminal works on several types of theory and theory-building methodologies" (p. 129). As Holton and Lowe (2007) have so eloquently said, "It is difficult to imagine starting a theory building journey without having attained an initial understanding of the phenomena sufficient to realize that new theory is needed" (p. 305). Therefore, this serious theory building research journey began with considerations of theory and theory building research. Torraco (2002) argued, "…theorist tend to pursue their work in ways that reflect their deep-seated values and assumptions about what constitutes knowledge (epistemology), the nature of being or existence (ontology), what constitutes value (axiology), and basic ideological and philosophical beliefs" (p. 356).

Denzin and Lincoln (2008) informed us of three interconnected, generic activities that define the qualitative research process, "The gendered, multiculturally situated researcher approaches the world with a set of ideas, a framework (theory, ontology) that specifies a set of questions (epistemology) that he or she then examines in specific ways (methodology, analysis)" (p. 18). Denzin and Lincoln (2008) argued, "The net that contains the researcher's

epistemological, ontological, and methodological premises may be termed a *paradigm*, or an interpretive framework, a 'basic set of beliefs that guides action' (Guba, 1990, p.17)" (p.19). According to Paul and Marfo (2001), "the paradigm debates in the 1990s were somewhat reminiscent of the debates about quantitative versus qualitative research in the 1980s" (p. 528). Others have led the paradigm debate advocating for changes in philosophy of science such as (Guba, 1985, 1990a, 1990b; Guba & Lincoln, 2004; Howe, 1985; Kuhn, 1996; Lincoln, 1985; Lincoln & Guba 2000, 2003; Marsick, 1990). Agnes (2001) offered a definition of a paradigm as, "(a) pattern, example, or model (b) an overall concept accepted by most people in an intellectual community, as those in one of the natural sciences, because of its effectiveness in explaining a complex progress, idea, or set of data" (p. 1043). For Kuhn (1996), "a paradigm is what the members of a scientific community share, and, conversely, a scientific community consists of men who share a paradigm" (p. 176). Kuhn (1996) restated the importance of a paradigm:

> On the other hand, within those areas to which the paradigm directs the attention of the group, normal science leads to a detail of information and to a precision of the observation-theory match that could be achieved in no other way (pp. 64-65). Kuhn also offered his insights on emergent paradigms, "Probably the single most prevalent claim advanced by the proponents of a new paradigm is that they can solve the problems that have led the old one to a crisis" (p. 153).

Kuhn's (1996) post-positivist perspective informed us that, "Both normal science and revolutions are, however, community-based activities" (p. 179). He also explained, "A paradigm governs, in the first instance, not a subject matter but rather a group of

practitioners. Any study of paradigm-directed or of paradigm-shattering research must begin by locating the responsible group or groups" (p. 180). For Kuhn, "The very existence of science depends upon vesting power to choose between paradigms in the members of a special kind of community" (p. 167). Is it plausible that qualitative inquiry could lead to good theory in scenario planning? Additional scholarly inquiry is still needed in this literature review before this question can be attended to.

Lewin (1945) argued, "…nothing is as practical as a good theory…." (p. 129), but what do philosophers mean with they refer to theory or theory building? Van de Ven (1989) suggested, "Good theory is practical precisely because it advances knowledge in a scientific discipline, guides research toward crucial questions, and enlightens the profession of management" (p. 486). Dubin (1969/1978) from a post-positivist tradition defined theory as "a model of some segment of the observable world…[that] describes the face appearance of the phenomenon in such terms as structures, textures, forms and operations" (p. 216). Theory building in an applied discipline, as described by Dubin, is "one way to link theory with research" (p. 2). The author further stated:

> …a [theory] summarizes what man can apprehend through his [or her] senses or infer from these sensory cues…these sensory cues are not themselves meaningful until organized by the mind…Hence the [theory] operates over the range of received sensory cues to organize them for purposes of human comprehension (p. 221).

Extending the work of theory-development scholars, Bacharach (1989) believed, "The primary goal of a theory is to answer the questions of *how, when and* why, unlike the goal of description, which is to answer the question of what" (p. 498).

Whetten (1989) asked in a journal article "*What Constitutes a Theoretical Contribution*?" He then posits a response to the rhetorical question:

What and How provide a framework for interpreting patterns, or discrepancies, in our empirical observations. This is an important distinction because data, whether qualitative or quantitative, characterize; theory supplies the explanation for the characteristics. Therefore, we must make sure that what is passing as good theory includes a plausible, cogent explanation for why we should expect certain relationships in our data. Together these three elements provide the essential ingredients of a simple theory: description and explanation (p. 491).

To continue with the theory-building research, it is most helpful to inquire about theory building paradigms as a part of scholarly review method. Walton (2008) stated, "Initial analyses of the recommended criteria for evaluating scenarios that are used within the scenario planning process indicate that they fall into the constructivist-interpretive paradigm" (pp. 156-157). Gioia and Pitre (1990) argued, "Interpretive theory building tends to be more inductive in nature. Through this process, researchers attempt to account for phenomena with as few a priori ideas as possible" (p. 588). After covering theory and theory building at an abstract-level, let's review what the literature inquiry reveals about theory and theory building in an applied discipline like HRD.

HRD and HRD Theory

Ruona and Lynham (2004) speaking from a qualitative project voice informs the HRD community on philosophical thought and action in this way, "Through these focuses philosophers are interested in answering the following three questions: (1) what is real? (a

question of ontology), (2) what is true? (a question of epistemology) and (3) what is good? (a question of axiology)" (p. 153). Collectively these component parts reflect a system of thought and action. Ruona and Lynham (2004) posited:

> Each of these components interacts with and influences the other, in a continuous cycle of integrated beliefs, thoughts and practice. These become our assumptions or frames/models which we bring to the world and which help us to make sense of it (p. 154).

Two of the above components (ontology and epistemology) attend to thought processes while the third component (axiology) attends to action or practice. According to Ruona and Lynham (2004), "HRD professional (whether practitioners or professional researchers) can use philosophy to affect three distinctive areas: (1) practice, (2) research and theory building and (3) the evolution of HRD" (p. 158).

Most accounts regarding HRD history indicates its age as a discipline is forty to fifty years old (Ruona, 2000). Ruona (2000) posits, "A review of our literature and practice does little to specify our distinctive contributions and clarify how we complement, rather than are the same as, closely related fields such as human resources" (p. 2). It is an environment of uncertainty that is akin to Ruona's description of a HRD literature review as listed above can drive philosophers to ask questions such as, what are the underpinning theories of HRD. For an answer to this question we can turn to Swanson and Holton (2009) as they define core HRD theory domains in this way, "The discipline of HRD and the model of HRD are believed to be supported and explained through the three core theory domains of psychology theory, economic theory, and systems theory (Passmore, 1997; Swanson, 1995a, 1995b)" (p.

92). Swanson and Holton also teach us that, "The concurrent questions are questions of philosophy: What is there? (ontology); How do you know? (epistemology); and Why should I? (ethics)" (p. 70). But what does all this talk about theory in HRD mean? To this philosophical inquiry, Swanson (2007) would offer, "Without a theory framework, there is a sense of randomness and incoherence to theory discussions and development" (p. 322). Swanson would go on to inform us, "Most applied disciplines are attempting to make significant advancements in articulating the theoretical foundation of their field of study" (p. 332).

Human Resource Development scholars continue to call for theory building efforts to advance this growing disciple of study (Gioia & Pitre, 1990; Lynham, 2002a, 2002b; Torraco, 2002, 2004, 2007; Torraco & Holton, 2002; Whitten, 1989). Performance improvement interests of Rummler and Brache (1995) are explicitly stated, "Our basic assumption is that HRD is in the performance improvement business". The question that should be asked in planning and implementing all HRD interventions is how this activity affects the performance of the business" (p. 201). Korte (2008), as an advocate for scenario planning stated, "Enhancing learning and performance through the scenario planning process directly supports the goal of HRD to contribute to the strategic mission of the organization" (p. 194). Lynham (2002b) a champion for HRD theory building postulates, "…it can just as easily be argued that good theory in applied disciplines is about as realistic as it comes (Dubin, 1969/1978; Lewin, 1945; van de Ven, 1989). Torraco (1997) eloquently stated, "A theory simply explains what a phenomenon is and how it works" (p. 115).

Scholarly HRD conversation regarding theory and theory building is ongoing and continuous as evidenced by Lynham (2002b) whom has also stated that the intention of theory building is to be, "useful to practitioners, researcher, and educator in learning about, engaging in, and evaluating the traits and outcomes of …applied theory building endeavors" (p. 223). For Lynham, (2002b), "*Theory building* is the ongoing process of producing, confirming, applying, and adapting theory" (p. 222). Swanson, Watkins, and Marsick (1997) also offer guidance on when qualitative research is most appropriate for Human Resources Development (HRD) scholars. They averred, "qualitative research is useful (1) for building *new theory* rather than imposing existing frameworks on existing data and (2) for exploring uncharted territory" (p. 92). Qualitative research seems uniquely suited for theory building in scenario planning which is purported to have a future of uncertainty.

Kees van der Heijden (1996) posits, "In scenario planning understanding structure is the 'building of theory' part of the loop" (p. 102). Chermack (2004b) posits several options which should be considered when addressing theory deficiency specifically cited in scenario planning:

Several options might be considered in addressing the theory deficiency that has been outlined. These options are (a) theory building through grounded theory research (Egan, 2002), (b) theory building through meta-analysis research (Yang, 2002), (c) theory building through social construction research (Turnbull, 2002), (d) theory building through case study research (Dooley, 2002), and (e) theory building through quantitative research (Dubin, 1969/1978; Lynham, 2002) (p. 303).

Chermack (2003a) posited, "Theory building research will therefore be a valuable contribution to the scenario planning literature" (p. 60). He then proceeds with theory building through the lens of a post-positivist tradition utilizing a quantitative theory building methodology, which is a way of ordering one perspectives. This epistemic thought being conveyed is grounded in prediction and control. An alternate nonpositivist theory building epistemology to Chermack's quantitative research regarding scenario planning theory building may be sought through a grounded theory methodology. Egan (2002) states, "Grounded theory research is important to HRD because of its potential for contribution to an overall agenda being established. The most salient link in the grounded theory research approach is its connection between theory and practice" (p. 290). Thus, in addressing the scenario planning theory development deficiency cited earlier in this paper, qualitative inquiry using grounded theory methodology offers yet another epistemology for scenario planning theory building efforts in HRD.

Additionally, Chermack and van der Merwe (2003) have also made contributions in scenario planning through the role of constructivist learning in scenario planning. Their methodology contribution to HRD centered in conceptual review, analysis, and synthesis of foundational constructivist and scenario planning literature. Chermack and van der Merwe state, "The purpose of this review was to show that constructivist principles of learning and teaching are linked to and can be used to inform the process of scenario planning" (p. 446). If Chermack and van der Merwe are correct regarding learning and teaching, then scenario planning may be viewed as a developmental process. Thus, development of human resources as an activity leading to performance improvement is central to the HRD discipline. As such,

additional theory building in the area of scenario planning would directly contribute to the HRD strategic agenda.

Within this decade, the strategic agenda facing HRD was cited in the book "*Foundations of Human Resource Development*" as being performance based, strategic capability and emergent strategy as three strategic roles assumed by HRD (Swanson & Holton, 2009). The strategic agenda is highlighted below in order to draw attention to and reflect on the relevancy of scenario planning in HRDs strategic future. Swanson and Holton (2009) posit HRDs strategic agenda as:

Performance Based

1. From a *strategic planning* perspective, the profession needs to learn more as to why HRD is not able to consistently provide a road map for developing and/or unleashing the human expertise required of an organization to achieve its strategic plan and is not able to consistently fulfill its commitment to execute its related strategic planning action plans.
2. From a *scenario planning* perspective, the HRD profession needs to cull valid tools for making critical judgments as to an organization's probability of being able to develop and/or unleash human expertise required of the various scenarios.

Strategic Capability

3. From a *strategic planning* perspective, the HRD profession needs to develop and validate a core strategy for overseeing the strategic planning

education and learning required of personnel for planning strategy (including the analysis and synthesis of internal and external conditions).

4. From a *strategic planning* perspective, the HRD profession needs to develop a validate a process (grounded in performance-based strategic contributions) for legitimizing their role as experts on the strategic planning team in creating new business based on the strategic development and/or unleashing of human expertise.
5. From a *scenario-building* perspective, HRD profession needs to develop a validate a core strategy for overseeing the scenario-building education and learning required of personnel for building shared, integrated mental models of multiple plausible futures.
6. From a *scenario-building* perspective, the HRD profession needs to develop and validate a process (grounded in performance-based strategic contributions) for legitimizing their role as experts on the DB team in contributing key human resource information and valuing all information being considered during scenario building.

Emergent Strategy

7. From a *strategic planning* perspective, the HRD profession needs to develop and validate a system for creating and maintaining ongoing learning and systems thinking (in the forms of internalization, comprehension, and synthesis) from its own strategic planning effort.

8. From a *strategic planning* perspective, the HRD profession needs to develop and validate a strategic planning process of information-sharing, strategic partnering and strategic finding critical to its host organization.
9. From a *scenario-building* perspective, the HRD profession needs to develop and validate an institutional learning and memory system that helps an organization avoid repeating mistakes within the realm of core expertise and new learning requirements.
10. From a *scenario-building* perspective, the HRD profession needs to develop and validate a process of engaging in ongoing strategic conversations of the organization from the HRD perspective (pp. 355-356)

Attainment of the HRD strategic roles cited above is likely to be achieved through sound theory and practice (Swanson & Holton, 2009). As one reflects on the HRD strategic agenda, the explicit role of scenario planning is highlighted in HRD strategic role attainment, in that elements of scenario planning may be seen as infused into the HRD strategic agenda items. Therefore, scenario planning is viewed as having a tightly coupled relation to the HRD core mission. As such, scenario planning theory and theory building are viewed as being central to the development of HRD as a discipline.

State of Scenario Planning and Scenario Planning Theory

Scenario planning may be a parallel concept to Lincoln and Guba's (2000) discussion for foundations of truth and knowledge paradigms:

> Or agreements may eventuate as the result of a *dialogue* that moves arguments about truth claims or validity past the warring camps of objectivity and relativity toward "a

communal test of validity through the argumentation of the participants in a discourse" (pp. 177-178).

Their argument was centered on the question of whether or not the world has a "real" reality existence outside of human experience. For scenario planning theory building, agreements about truth may appear as substantive knowledge within a given collective of participants in a discursive strategic conversation regarding inferences toward multiple plausible futures. We are reminded that in a postmodern moment there can be no one single truth. Scenario planning phenomenon parallels the postmodern moment regarding a common discourse as described by Lincoln and Guba (2000):

Rather, it is because, in the postmodern moment, and in the wake of poststructuralism, the assumption that there is no single "truth"—that all truths are but partial truths; that the slippage between signifier and signified in linguistic and textual terms creates re-presentations that are only and always shadows of the actual people, events, and places; that identities are fluid rather than fixed—leads us ineluctably toward the insight that there will be no single "conventional" paradigm to which all social scientist might ascribe in some common terms and with mutual understanding (p. 185).

While scenario-based planning methodology reviewed in this literature review was inclusive of multimethod, multidisciplined, multiparadigmatic in focus regarding historically situated data collection, it then develops scenarios depicting multiple plausible futures of which outcome are not truth or partial truth, but a representation of what a glimpse of the future might hold.

Wright and Goodwin (1999) advocated that scenario planning precede decision analysis processes in planning processes, in that, decision makers may challenge preconceptions and assumptions but fail to achieve creative thinking that could lead to alternative decision options. Wright and Goodwin (1999) are concerned that, "…there is nothing inherent in the 'standard' analysis that will challenge the decision maker's *a priori* worldview of the course of unfolding events in the external world" (p. 312). For Wright and Goodwin, "…scenario planning contains components to both promote alternative views about the nature of the future and to stimulate the subsequent creation of enhanced decision options" (p. 312). For van der Heijden, Bradfield, Burt, Cairns, and Wright (2002), essentially, "scenario planning interventions within organizations support the construction of multiple frames of future states of the external world, only some of which may be well aligned with current strategy" (p. 63).

Scholars researching the origins of scenario technique noted that intuitive logics methodology developed at Shell and described by Wack (1985b) could be descriptive or normative focused scenarios (Bradfield et al., 2005; Huss & Honton, 1987). Additionally, scenario planning is identified (formerly intuitive logics methodology) as being firmly process orientated (Bradfield et al., 2005). It should be noted that they also found approaches taken to develop scenarios as being either inductive or deductive with all approaches being subjective within qualitative traditions. Their review of scenario planning in the probabilistic modified trends school reports scenario work to be of a once-off activity utilizing quantitative and analytical approaches designed with exploratory and predictive outcomes. Thirdly, studies on the La Prospective Models revealed phenomenon that was specific and a

once-off activity, descriptive in perspective utilizing quantitative and analytical approaches relying on complex computer-based analysis. Shoemaker (1995) argued, "…scenarios go beyond objective analyses to include subjective interpretations" (p. 27). Provo, Ruona, Lynham, and Miller (1998) note, "Scenarios go beyond objective analysis, often including qualitative elements of change that cannot be quantitatively modeled, such as changes in social values and in legal regulations" (p. 336).

Korte (2008) proposed operationalizing organization-level implications for scenario planning. He recognized the learning development benefits from scenario planning, but is also concerned with how to make scenario planning effective. Korte (2008) stated, "This effort becomes a complex process of operationalizing the learning of the planning team into the relationships, routines, practices, and culture of the organization" (p. 189). Scholars have noted a desired outcome of scenario planning as a shift in thinking of scenario planning participants (Bradfield, 2008; Chermack, 2004c; Wack, 1985b; Walton, 2008). Shifting thinking in the dominate decision makers of an organization was understood by Wack (1985b) as, "The most important purpose of the scenario building process is to shift the thinking of the leadership inside the organization about what might happen, in the future, in the external environment" (p. 72).

This notion of shifting thinking of leadership within an organization may be akin to Argyris notion of errors. Implementation of scenario planning outcomes has been viewed as problematic as well (Wilson, 2000), in part, due to practical and procedural considerations stemming from cultural and psychological considerations. Wilson (2000) explains how planning culture biases serve as a source of said difficulty:

> The planning culture in most corporations is still heavily biased toward single-point forecasting. In such a context, the managers' premise is, "Tell me what the future will be; then I can make my decision." So their initial reaction, when confronted with the apparent emphasis in scenarios on "multipoint forecasting," is likely to be one of confusion and disbelief, complaining that three (or four) "forecasts" are more confusing, and less helpful, than one. The fact that this is a misperception of the nature and role of scenarios does not in any way lessen the implementation problem (p. 24).

Argyris (1999) defined learning as "detecting and correcting error" (p. 78). A shifting in thinking is also discussed by Bradfield (2008):

> Writers on the subject of scenarios contend that the power of scenarios is that they overcome this single interpretation/outcome predisposition by engaging participants in a wide-ranging exploration of exogenous variables in the contextual environments and systematically contemplating how these may combine to evolve in a variety of ways in the future, bringing about a shifting of personal frames of reference and changes in the mental models of the scenario participants (pp. 207-208).

If the proposed shift in thinking for scenario planning participants informs expansive thinking of scenario planning participants prior to a reductionist stage of decision making, then planning scenario planning process has successfully challenged assumption, beliefs, mental models of scenario planning participants.

Shoemaker (1995) posited the aim of scenario planning in this way, "Above all, however, scenarios are aimed at challenging the prevailing mind-sets" (p. 27). Additionally,

Shoemaker (1995) perceived expansive thinking as value added, "Managers who can expand their imaginations to see a wider range of possible futures will be much better positioned to take advantage of the unexpected opportunities that will come along" (p. 25). At the time of his writing, Shoemaker delineated between scenario planning and other planning methods such as contingency planning (a method that examines only one uncertainty), sensitivity analysis (examines the effect of a change in one variable), and computer simulations (objective analysis modeling). As understood by Shoemaker (1995), "Although scenario planning has been examined by academics and described by practitioners, no previous article has sought to bridge the theory and practice" (p. 26). For Shoemaker, scenarios explore the joint impact of various uncertainties standing as equals to one another.

Scholars have identified organizations as systems (Chermack, 2003b, 2005; Korte, 2008; Kozlowski & Klein, 2000; Parsons, 1951, 1960; Parsons & Shils, 1962; Rummler & Brache, 1995; Wiek, Binder, & Scholz, 2006). Additionally, general systems theory thinking may be viewed in van der Merwe's (2008) perspective, "…the capability for seeing wholes and interconnections is absolutely critical in scenario planning" (pp. 219-220). From Rummler and Brache (1995) organization performance improvement position they reported, "Our framework is based on the premise that organizations behave as adaptive systems" (p. 9). Van der Heijden et al. (2002) described scenario planning as having grown out of ongoing practice over time to overcome inertia and pitfalls of traditional thinking. Scenario planning has evolved from a practitioner-level venue and while utilized in management circles, it is atheoretical in nature. Bradfield (2008) posited, "This [scenarios] confusion may be explained by the fact that unlike other long-range forecasting methods there appears to be no

solid theoretically based foundation underpinning scenario techniques" (pp. 198-199). Bradfield's (2008) recent work indicates:

> The literature on scenario planning can be neatly divided into two broad categories: (a) anecdotal, practitioner oriented articles that describe how scenario planning has been undertaken in organizations, its espoused benefits, and experienced-based advice on how to construct scenarios and (b) articles that are more academic and analytical in that they attempt to provide a theoretical underpinning for scenarios based on a small body of empirical studies of related topics (p. 198).

Reflecting back on the seminal work of Pierre Wack (1985a, 1985b) there remains a lack of theory building research regarding scenario planning. Where does one begin with theory building research in scenario planning? Swanson (1997) offered his perspective on a theory-practice dilemma in an applied field, "As an applied field, the theory-practice dilemma is of particular importance to HRD. Most HRD scholars recognize *practice-to-theory* to be as true as *theory-to-practice*" (p. 12). Swanson's insightfulness in this regard is viewed as a positive in promoting a collective community of cooperation in theory building; especially helpful in scenario planning since scenario planning theory building is trailing the practitioner community's use of scenario planning. Swanson (1988) informed us of the Theory-Research-Development-Practice cycle with an application of systematic inquiry methods advancing knowledge.

Since the history of scenario planning dates back to the 1960s, it seems plausible to enter the Theory-Research-Development-Practice cycle from the practice lens. The lack of HRD-related theories in scenario planning indicates the much needed theory building might

begin in the field where scenario planning practices are occurring. As such, entrance into the Theory-Research-Development-Practice cycle could be probed through qualitative inquiry utilizing grounded theory methodology to inform theory building. If so, the resulting scenario planning theory might confirm/disconfirm the plausibility of van der Heijden et al. (2002) exclamation that, "Scenarios offer a powerful and unique method of harnessing organizational insights, enabling organizations to adapt to change, by exploiting adaptive organizational learning, including perception, thinking and action" (p. 5). With the thought of scenario planning theory building under consideration, we turn our attention to Thomas Chermack's contributions to theory building in HRD—scenario planning.

Chermack devised a method of evaluating performance-based scenario planning (Chermack, 2003b, 2004b, 2005), and stands alone as the sole HRD theorist to date for developing a scenario planning theory. Chermack's theory of scenario planning follows the post-positivist traditions of epistemology and utilizes Dubin's (1969/1978) quantitative theory building methodology. In Chermack's theoretical model for scenario planning, the core argument of the paper was to evaluate performance improvement at several levels (Chermack, 2004b, 2005) of organizations. In addition to the quantitative theory building methodology, Chermack has also encouraged the HRD community to consider alternate epistemic strategies in resolving scenario planning theory deficiency (Chermack, 2004b). Chermack, Lynham and van der Merwe (2006) has acknowledged a lack of data-based and empirically-drive studies about the phenomenon, as well as advocated for scenario planning and perceptions of learning organization characteristics.

Keough and Shanahan (2008) observed that Chermack explored the theoretical side of scenario building. In Keough and Shanahan critique of "*Studying Scenario Planning: Theory, Research Suggestions and Hypotheses*" they found that, "Although Chermack did attempt to capture some of the nuances involved in the scenario building process, the model constitutes a more theoretical explanation of how scenario planning works at the individual level rather than a detailed depiction of the process" (p. 172). Walton's (2008) critique of Chermack's work in "*A Theoretical Model of Scenario Planning*" stated, "Chermack generated a staged, systems-based theoretical model for scenario planning that differentiated between option generation and decision formulation" (p. 148).

Linking Scenario Planning and HRD Theory and Practice

Chermack asserts a need to articulate a theory for scenario planning (Chermack, 2002) to address scenario planning theory building deficiencies. Just a few years later, Chermack (2005) alerts the HRD community again, "The problem is that there has been inadequate research and theory development to support the fast growing practice of scenario planning" (p. 60). Through this scholarly literature review, gaps in scenario planning theory and theory building should inform a way forward for making a scholarly contribution in scenario planning theory. Perhaps reflective thought on the timeframe that scenario technique, scenario construction became popular in Western culture is a launching off point for our reflective thought. One such research question leads to questioning noted linkage between scenario planning and HRD theory and practice that may reside in a historical perspective informed by positivist and post-positivist movements? How does one link scenario planning to HRD theory and practice? Linking scenario planning and HRD theory

and practice has paradigmic implications as well as a system of thought and action implications in branches of philosophy such as: ontology, epistemology and axiology.

A trip down scenario planning memory lane would take us back in time to the 1960s. During the 1960s, pure science communities such as Sociology were in search for grand theories of societies. Positivist and post-positivist movements were in vogue with a view of reality that espoused an objective reality with external/internal criteria (Denzin & Lincoln, 2008). Regarding scenario planning, could it be that the dialogic discussions of that era have never really passed, despite paradigm debates in the scientific community? Upon returning from the trip down memory lane, we might rediscover a remnant of positivist theory lingering in 21st century scenario planning methodology. A highlight of positivist and post-positivist paradigm in relationship to scenario planning theory development is discussed next.

Post-Positivist Paradigm: Grand Theory of Action

A prominent sociologist from that era such as Talcott Parsons and his empirical post-positivist grand theory building work merits reflective thought in HRD—scenario planning theory development. Parsons (1968) always maintained his work to be an empirical work orientated towards Western society. His work in sociology was post-positivist by design. Parsons (1968) stateed, "…I had also been impressed by two movements that opposed the empiricist atomism of the behaviorist movement in psychology, namely, *Gestalt* psychology and the 'purposive' behaviorism of E. C. Tolman" (p. viii). Additionally, Parsons (1968) believed, "Scientific truth is not an all or none proposition, but a matter of successive approximation" (p. 38). In development of grand theory, he did not conduct an analysis of

social structure in all possible aspects. Primacy of his research orientation was concerned with social structure in terms of an action schema.

Parsons and Shils (1962) began development of a grand theory of action for the purpose of uniting the social sciences. The theory was of a logico-deductive persuasion and focused on a societal-level of theory development. Their abstract work was a launching off point and by no means a complete theory. Parsons and Shils (1962) stated, "The theory of action as it now stands does not purport, as I have said, to be developed to the state of being a complete general theory for the social sciences" (p. 43). Their elements of action were organized into three interdependent kinds of systems: personalities, social systems, and cultural systems. Parsons and Shils (1962) described them in this manner, "Culture, personality, and social system—all three—are theoretical models, systems of free concepts and principles. All are abstractions from activity and relate activity to things outside the organism" (p. 41). The theory was voluntaristic by design and in direct reaction to positivistic traditions which did not account for free concepts and principles of actors.

Parsons' (1951) in "*The Social System*" illustrates, …"a conceptual scheme for the analysis of social systems in terms of the action frame of reference" (p. 3). In this writing, he discusses the goal-directedness of action as a fundamental property of all action-systems that are normatively orientated. Parsons' (1951) working definition of an organization was, "A system of cooperative relationship may be called an *organization*" (p. 72). Additionally, he assigns a boundary-maintaining system characteristic to his definition of organizations. Meaning organizations maintain relationships with social structures outside of its own system. Typically, this is accomplished through a disposition of goods or services as an input

to another social system functioning within society. Parsons (1951) also informed us of what an organization is not, "but for the theory of action the organism is not a system, but a *unit point of reference*" (p. 542). He brings us into remembrance that, "A system of action, then, is a system of the relations of organisms in interdependence with each other and with non-social objects in the environment or situation" (p. 543). Parsons (1951) argueed, "It is *this relational system which is the system of action*, not the organism as a system" (p. 542).

In 1960 Parsons published "*Structure and Process in Modern Societies*" which included a study of organizations as part of his study of social structure. In his writings, he informs us that, "As a formal analytical point of reference, primacy of orientation to the attainment of a specific goal is used as the defining characteristic of an organization which distinguishes it from other types of social systems" (p. 17). Goal attainment centered on relational criteria between a system and the relevant parts of the external situation (environment) in which it operates. Parsons (1960) informs us:

In any of these cases there must be a set of consequences of the processes which go on within an organization, which make a difference to the functioning of some other subsystem of the society; that is, without the production of certain goods the consuming unit must behave differently, i.e. suffer a 'deprivation' (p. 17).

Parsons (1951) posited, "The key concept is that of the 'division of labor' as developed by Adam Smith and his successors in utilitarian, especially economic theory" (p. 70).

Parsons (1960) expanded on this earlier position, "The existence of organizations as the concept is here set forth is a consequence of the division of labor in society" (p. 18). If

there is a true division of labor in a society, then it must have a concrete structure. Parsons (1960) stateed, "Like any social system, an organization is conceived as having a describable structure" (p. 20). In fact, Parsons defines organizations as a subsystem of a more comprehensive social system. As such, the subordinate subsystem must adhere to the value system of the superordinate system, unless it is a deviant subsystem. Parsons (1960) puts forth, "…the development of organizations is the principal mechanism by which, in a highly differentiated society, it is possible to 'get things done,' to achieve goals beyond the reach of the individual and under conditions which provide a relative maximization of effectiveness…" (p. 41). Parsons' theory of action is relevant to this study, in that, it is a grand theory of action that scenario planning methodology may be anchored. Meanwhile the post-positivist, functionalist grand narrative has since fallen out of favor; scenario planning methodologies may be grounded in this tradition.

Denzin and Lincoln (2008) informed us on the postpositivist movement, "Postpositivism functioned as a powerful epistemological paradigm. Researchers attempted to fit Campbell and Stanley's (1963) model of internal and external validity to constructionist and interactionist conceptions of the research act. They returned to the texts of the Chicago school as sources of inspiration (see Denzin, 1970, 1978)" (p. 14).

Just as positivist and post-positivist traditions linger like long shadows over the qualitative research project (Denzin & Lincoln, 2008), perhaps they are lingering over scenario planning methodologies as well. If HRD scholars are to link HRD—scenario planning theory building deficiency, alternate paradigm for theory building such as the constructivist—Interpretive

paradigm is a consideration. Table 7 below serves as a visual representation of basic beliefs (Metaphysics) of alternative inquiry paradigms.

Table 7 Basic Belief (Metaphysics) of Alternative Inquiry Paradigms.

Item	Positivism	Postpositivism	Constructivism
Ontology	Naïve realism—"real" reality but apprehendable	Critical realism—"real" reality but only imperfectly and probabilistic apprehendable	Relativism—local and specific constructed realities
Epistemology	Dualist/objectivist; findings true	Modified dualist objectivist; critical tradition/community; findings probably true	Transactional/subjectivist created findings

Source: Lincoln & Guba, 2000, p. 165.

A paradigm shift will drive a change in epistemic inquiry change informing the research strategies. As you may recall, Chermack (2004b) suggested several options which should be considered when addressing scenario planning theory deficiencies to include:

> These options are (a) theory building through grounded theory research (Egan, 2002), (b) theory building through meta-analysis research (Yang, 2002), (c) theory building through social construction research (Turnbull, 2002), (d) theory building through case study research (Dooley, 2002), and (e) theory building through quantitative research (Dubin, 1969/1978; Lynham, 2002) (p. 303).

Prior to making the observation regarding multiple alternative epistemic approaches to qualitative inquiry, Chermack (2003b, 2004b) developed a scenario planning theory utilizing the quantitative analysis approach which should be discussed.

Post-Positivist Paradigm: Mid-Range Theory Of Scenario Planning

Chermack's (2003b, 2004b) theory of scenario planning follows the post-positivist traditions of epistemology and utilizes Dubin's (1969/1978) quantitative theory building methodology. In Chermack's theoretical model for scenario planning, the core argument of the paper was to evaluate performance improvement at several levels (Chermack, 2003b, 2004b, 2005). However, in the scenario planning theory development paper (Chermack, 2003b, 2005), neither the first ten hypothesis pertaining to participation in scenario planning nor the additional four hypothesis pertaining to relationships between units of the theory contain explicit statements regarding multiple levels of interaction. Chermack's proposed conceptualization of a theory of scenario planning is a valuable contribution to HRD theory building, as well as established an anchor point for comparative studies on alternate approaches to scenario planning theory building.

Constructivist-Interpretive Paradigm: Mid-Range Theory of Scenario Planning

As stated earlier in this paper, there is no constructivist theory on scenario planning. It appears methodology in scenario planning is rooted in a worldview that perceives reality that is "out there" to be studied or understood much like the positivist and post-positivist traditions in the physical and social sciences (Denzin & Lincoln, 2008). Following in the footsteps of scholarly qualitative researchers, additional ontological and epistemological questioning of paradigms needs to be asked. Walton (2008) questioned the ontological basis for scenario planning:

> The ontological assumption underlying the construction of scenarios is that there will be a future world with attributes not entirely dissimilar to those of today but with a

degree of pliability that will encompass change over time through ongoing occurrences, both anticipated and unexpected (p. 155).

Walton posited, "The very act of constructing a scenario about the future brings about its ontological status" (p. 156). Walton concludes, "If we define knowledge conventionally as 'true justified belief,' in terms of the scenarios that are constructed we cannot demonstrate 'true' in a way that is normally recognized" (p. 161). Asking ontological related question about scenario planning phenomenon is a solid foundation on which to construct alternate theories of scenario planning.

Van der Heijden, et al., (2002) described the scenario planning environment as, "The scenario process combines space for differentiation of views with integration of views towards a synthesis through the strategic conversation implicit in it" (p. 85). It is this inclusive interaction process that creates a more normative environment and steers an organization away from group thinking or prevents organizational fragmentation from occurring. McLean and Egan (2008) purported, "…the result of scenario planning is not a more accurate picture of tomorrow but better thinking and an ongoing strategic conversation about the future" (p. 240). From a researcher's perspective, Walton implicitly accepts that there is a multifaceted future world in which inferences or conjectures may be made. The theoretical problems surface once an epistemological lens is identified by which to evaluate scenario planning. For example, a positivist-post-positivist evaluation construct of validity, reliability, predictability would not really be entirely appropriate as sole source measurements in a subjective phenomenon such as scenario planning. However, a constructivist-interpretist tradition could accommodates scenario planning theory building, in

that, an evaluation or judgment of scenario planning is centered in criteria such as plausible multiple futures. In this scenario the epistemic orientation to research serves to define good or bad inquiry.

Multilevel Theory Building

Theorist on organization studies advocate for multiple levels of analysis in the phenomenon of organization studies (Chermack & van der Merwe, 2003; Dansereau, Yammarino & Kohles, 1999; Klein, Dansereau & Hall, 1994; Kozlowski & Klein, 2000). Having established a theoretical and practice link between scenario planning and HRD organizations are explored as multilevel performance system (Dansereau et al., 1999; Garavan et al., 2004; Klein, Tosi, & Cannella, 1999; Korte, 2008; Kozlowski & Klein, 2000). Garavan et al. (2004) informed us, "A number of important dimensions of ontology, epistemology, and axiology are considered of direct relevance to HRD" (p. 425). Kozlowski and Klein (2000) reported, "The epistemological foundation and several basic assumptions for the levels perspective are rooted in general systems theory (von Bertalanffy, 1968) and related variants" (p. 4). A general systems theory connection is made by Kozlowski and Klein (2000), "Systems concepts originated in the 'holistic' Aristotelian worldview that the whole is greater than the sum of its parts, in contrast with 'normal' science, which tends to be insular and reductionistic" (p. 6). Klein et al., (1999) go on to inform us that, "Philosophical assumptions represent the backdrop within which to consider the issues within and between each level of analysis" (p. 426). Theory building research has from time to time focused on single level theory building aimed at multiple level phenomena. Kozlowski and Klein (2000), "Fundamental to the levels perspective is the recognition that micro phenomena are

embedded in macro contexts and that macro phenomena often emerge through the interaction and dynamics of lower-level elements" (p. 7). Klein et al., (1999) explained the importance of MLTB for researchers and practitioners:

> Multilevel theories span the levels of organization behavior and performance, typically describing some combination of individuals, dyads, teams, business, corporations, and industries. Multilevel theories, thus, begin to bridge the micro-macro divide, integrating the micro domain's focus on individuals and groups with the macro domain's focus on organizations, environments, and strategy (p. 243).

Kozlowski and Klein (2000) put forth:

> First, we urge scholars to begin to fashion their theoretical models by focusing on the endogenous construct(s) of interest: What phenomenon is the theory and research attempting to understand? The endogenous construct, or dependent variable, drives the levels, constructs, and linking processes to be addressed by the theory (p. 12).

Dansereau et al. (1999) informed us, "…factors (variables) exogenous to the actors or the level may bring about changes from one level to another" (p. 351). Korte (2008) also posits a MLTB perspective, "Viewing organizations as multilevel systems requires that planners attend to the influences of unique elements within each level of analysis and attend to cross-level interactions" (p. 181). Kozlowski and Klein (2000) offered, "By definition, multilevel models are designed to bridge micro and macro perspectives, specifying relationships between phenomena at higher and at lower levels of analysis (for example, individuals and groups, groups and organizations, and so on)" (p. 14).

Rummler and Brache (1995) put forth, "…the majority of managers simply do not understand the variables that influence organization and individual performance" (p. 2). Chermack and van der Merwe (2003) contribute to our understanding of multilevel theory building perspectives in scenario planning by virtue of the process recommended for selecting within organization scenario planning participants. They recommend, "In selecting candidates to interview to ground the scenarios in the relevant concerns of the leadership a common practice is to select the interviewees on a hierarchical basis to engage the dominant coalition or core group of the organization" (p. 454). Klein, et al., (1994) argues, "…precise articulation of the level of one's constructs is an important priority for all organizational scholars whether they propose single-or mixed-level theories" (p. 196). Korte (2008) averred, "Because organizations are complex, multilevel systems, scenario planners must also focus the complexities of learning across multiple levels of analysis" (p. 2008). Kozlowski and Klein (2000) informed us:

> Configural unit properties do not rest on assumptions of isomorphism and coalescing processes of composition but rather on assumptions of discontinuity and complex nonlinear processes of *compilation.* The resulting constructs are qualitatively different yet functionally equivalent across levels (p. 31).

Kozlowski and Klein (2000) summed it up for us when they say, "Organizations are multilevel systems" (p. 3). Informal patterns of social interaction must be accounted for, in that, they shape emergence processes (Kozlowski & Klein, 2000). Kozlowski and Klein (2000) averred that, "A meaningful understanding of the phenomena that comprise organizational behavior necessitates approaches that are more integrative, that cut across

multiple levels, and that seek to understand phenomena from a combination of perspectives" (p. 77). MLTB according to Kozlowski and Klein (2000), "Theory needs to be able to capture the rich complexity of emergence rather than limiting emergence to universal conceptualizations that often do not exist" (p. 61).

Grounded Theory Methodology

Scholars have discovered grounded theory methodology from data systematically obtained from social research (Dey, 1999; Egan, 2002; Glasser & Strauss, 1967) that assumes the relativism of multiple social realities. Egan (2002) articulated, "Grounded theory research is commonly accepted to be holistic, naturalistic, and inductive" (p. 279). Charmaz (2000) stated, "Essentially, grounded theory methods consist of systematic inductive guidelines for collecting and analyzing data to build middle-range theoretical frameworks that explain the collected data" (p. 509). Glaser and Strauss (1967) argued, "While verifying is the researcher's principal and vital task for existing theories, we suggest that his [sic] main goal in developing new theories is their purposeful systematic generation from the data of social research" (p. 28). In their seminal work, Glaser and Strauss (1967) offered:

By contrast, the constant comparative method cannot be used for both provisional testing and discovering theory: in theoretical sampling, the data collected are not extensive enough and, because of theoretical saturation, are not coded extensively enough to yield provisional tests, as they are in the first approach. They are coded only enough to generate, hence to suggest, theory (p. 103).

Glaser and Strauss (1967) stated, "Sociologist who set themselves the task of generating theory from the data of social research have a job that can be done only by the

sociologist, and that offers a significant product to laymen and colleagues alike" (p. 30). A more descriptive definition put forth by Strauss and Corbin (1990) was:

> A grounded theory is one that is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis and theory stand in reciprocal relationship to one another (p. 23).

Charmaz (2000) posited, "Throughout the research process, grounded theorists develop analytic interpretations of their data to focus further data collection, which they use in turn to inform and refine their developing theoretical analysis" (p. 509). Glaser and Strauss (1967) stated, "Using the constant comparative method makes probable the achievement of a complex theory that corresponds closely to the data, since the constant comparisons force the analyst to consider much diversity in the data" (p. 114). Dey (1999) reported, "One of the distinctive aspects of grounded theory is its firm location in an interactionist methodology. Hence grounded theory is oriented to explicating 'basic social processes' in dynamic terms—or, to put it crudely, how actions have consequences" (p. 63). For Charmaz (2000), "Constructivist grounded theory celebrates firsthand knowledge of empirical worlds, takes a middle ground between postmodernism and positivism, and offers accessible methods for taking qualitative research into the 21st century" (p. 510).

Glaser and Strauss (1967) instructed us, "Our strategy of comparative analysis for generating theory puts a high emphasis on *theory as process*; that is, theory as an ever-developing entity, not as a perfect product" (p. 32). In the theory building process Glaser and

Strauss recommend that the theorist not use borrowed categories located in the qualitative inquiry process, but to allow said categories to emerge in the data collection process: Working with borrowed categories is more difficult since they are harder to find, fewer in number, and not as rich; since in the long run they may not be relevant, and are not exactly designed for the purpose, they must be respecified. In short, our focus on the emergence of categories solves the problem of fit, relevance, forcing, and richness (p. 37).

Glaser and Strauss (1967) view a first requirement for breaking established sociology bounds is to generate new theory from data. Egan (2002) argued, "Having established a problem or topic in general terms and chosen where the research question could be examined more closely, evidence is allowed to accumulate by the researcher, resulting in an 'emerging' theory" (p. 278). Unlike qualitative research, in the grounded theory methodology a researcher does not excessively pile up evidence to establish proof as this piling up process may hinder the generation of new hypotheses. Glaser and Strauss (1967) purported, "Theoretical sampling reduces the mass of data that otherwise would be collected on any single group. Indeed, without theoretical sampling for categories one could not sample multiple groups; he would be too bogged down trying to cover just one" (p. 70). Glaser and Strauss (1967) argued:

> By contrast, the constant comparative method cannot be used for both provisional testing and discovering theory: in theoretical sampling, the data collected are not extensive enough and, because of theoretical saturation, are not coded extensively enough to yield provisional tests, as they are in the first approach. They are coded only enough to generate, hence to suggest, theory (p. 103).

Glaser and Strauss (1967) posited, "In the beginning, one's hypothesis may seem unrelated, but as categories and properties emerge, develop in abstraction, and become related, their accumulating interrelations form an integrated central theoretical framework—*the core of the emerging theory*" (p. 40). It is the function of joint collection, coding, and analysis of data is the underlying operation that permits an emerging theory. Dey (1999) cautioned on the use of grounded theory methodology:

> If evidence can always support alternative accounts, it behooves the researcher to consider the strengths and weaknesses of rival interpretations. But in grounded theory there seems to be no such thing as an alternative interpretation. There is only room for one account. This preoccupation with the production of a systematic but singular account is most evident in the (if need be, arbitrary) selection of core categories as the central theme of the research (p. 243).

Glaser and Strauss (1967) resisted a priori hypotheses in the grounded theory methodology:

> Beyond the decisions concerning initial collection of data, further collection cannot be planned in advance of the emerging theory (as is done carefully in research designed for verification and description). The emerging theory points to the next steps—the sociologists does not know them until he [sic] is guided by emerging gaps in his [sic] theory and by research questions suggested by previous answers (p. 47).

Glaser and Strauss (1967), "… describe in four stages the constant comparative method: (1) comparing incidents applicable to each category, (2) integrating categories and their properties, (3) delimiting the theory, and (4) writing the theory" (p. 105). Grounded

theory methodology according to Charmaz (2000) involves six strategies to build explanatory frameworks. Charmaz (2000) puts forth:

> The strategies of grounded theory include (a) simultaneous collection and analysis of data, (b) a two-step data coding process, (c) comparative methods, (d) memo writing aimed at the construction of conceptual analysis, (e) sampling to refine the researcher's emerging theoretical ideas, and (f) integration of the theoretical framework (pp. 510-511).

Charmaz (2000) argued, "Hence a grounded theorist—or, more broadly, a qualitative researcher—constructs a picture that draws from, reassembles, and renders subjects' lives" (p. 522).

Conclusions

The examination of HRD-scenario planning connections emphasized two contexts—scholarly scenario planning literature outside the HRD discipline that has implications for HRD-scenario planning and scholarly literature exploring HRD-related areas with explicit connections to scenario planning. Findings from scholarly research outside of the HRD discipline were a history of scenario planning as being a practitioner led activity, post-positivist grand theory of action, MLTB, and grounded theory methodology. In addition, HRD—scenario planning theory explicit connections included findings related to HRD—scenario planning definitions, a general state of scenario planning theory deficiency, and mid-range postpositivist theory of scenario planning theory utilizing quantitative analysis as the research strategy.

Scenario planning (formerly intuitive logics methodology) has evolved into an alternative school of strategy beginning over fifty years ago with Pierre Wack at Shell in the1960s. As viewed by Chermack and Swanson in their journal article titled "*Scenario Planning: Human Resource Development's Strategic Learning Tool*", Chermack and Swanson (2008) avered, "The fundamental position being advocated in this article (as well as throughout this issue of *Advances*) is that HRD professional should capture and develop the research and practice of scenario planning as the profession's primary strategic learning tool" (p. 130).

The literature review provided a theoretical and empirical framework on which the MLTB in scenario planning might advance theory in the HRD discipline. Additionally, scenario planning theory building will need to attend to multiple levels of analysis of an organization as a performance system. Because organizations are complex, multilevel systems, scenario planners must also focus the complexities of multiple levels of analysis to which MLTB is well suited. Multilevel theory development in scenario planning has the potential to span the levels of organizational behavior and performance, describing relevant combinations of individuals, dyads, teams, business, corporations, and industries in order to bridge micro and macro perspectives, specifying relationships between phenomena at higher and at lower levels of analysis.

While the grounded theory methodology is not without controversy, Egan (2002) stated, "The grounded theory research approach presents promising possibilities for the development of theoretical frameworks that emerge from research situated in practice and enhance the HRD theorist-HRD practitioner partnership in the process of theory building" (p.

277). One distinctive aspects of grounded theory is its firm location in an interactionist methodology which is well suited for scenario planning theory building. As stated earlier in this paper, constructivist grounded theory takes a middle ground between postmodernism and positivism, and offers accessible methods for taking qualitative research into the 21st century (Charmaz 2000). It is time for HRD scholars to respond to HRDs strategic agenda, as well as Chermack's concern for scenario planning theory building deficiency. Swanson (2003) encouraged the HRD scholarly community, in this way, "Out of necessity, HRD scholars have historically been masters of three domains—theory, research, and practice" (p. 209).

Finally, there are additional work that should be done to clarify the use of scenario planning approaches in support of HRD professionals and the use of scenario planning by HRD as a business practice in multiple industries and contexts. The additional work includes HRD—scenario planning theory building from alternative paradigms and perspectives, research strategies and methods of data collection and analysis. There is also the converse including the use of scenario planning to develop HRDs strategic agenda. There are many opportunities to examine HRD—scenario planning connections, and its hoped that this examination of literature and key concepts is beneficial to future research, practice applications, and theory building.

CHAPTER III

METHODOLOGY

Theory building research will be employed as the methodology for this study that results in a MLTB model for applied disciplines capable of attending to interpretive theory building processes. The preferred definition of *theory building research* for this discussion is "the process or recurring cycle by which coherent descriptions, explanations and representations of observed or experienced phenomena are generated, verified and refined" (Lynham, 2000b, p. 161). As previously stated, the purpose for conducting this study is to develop a multilevel, interpretive theory of SP as a means of further connecting SP to HRD, developing theory that most accurately represents SP and HRD contexts, and advancing theory building in HRD. Despite challenges associated with multilevel theory development, there have been several HRD scholars contributing to multilevel theory building (Reynolds-Fisher, 2000; Upton, 2006). This study follows in their footsteps exploring levels issues in the context of SP and HRD to make explicit connection of levels issues for future research in HRD.

By developing a multilevel theory of SP, the goal is to explore levels issues in the context of SP and HRD and to explicitly connect these levels for future research in HRD. Before examining MLTB methods, the current state of SP theory building in HRD must be explored in order to provide the reasoning for using a multilevel approach. That examination is followed by a summary and comparison of Dubin's post-positivist, single-level theory building model and comparison of the MLTB principles of Kozlowski and Klein (2000), Morgeson and Hoffman's (1999) guidelines for collective MLTB constructs. This chapter

continues with a discussion of the need to integrate MLTB principles and guidelines for collective MLTB constructs into Dubin's post-positivist, single-level theory building model for applied disciplines as the rationale for this methodology. Finally, a new and improved theoretical model for MLTB is presented for use in developing a multilevel, interpretive theory of SP.

State of SP Theory Building in HRD

Chermack (2004b) recommended an array of theory building options for consideration when addressing scenario planning theory deficiency,

These options are (a) theory building through grounded theory research (Egan, 2002), (b) theory building through meta-analysis research (Yang, 2002), (c) theory building through social construction research (Turnbull, 2002), (d) theory building through case study research (Dooley, 2002), and (e) theory building through quantitative research (Dubin, 1969/1978; Lynham, 2002) (p. 303).

Chermack (2003b, 2004b) elected Dubin's (1969/1978) empirical-quantitative research model to generate a post-positivist, single-level theory of scenario planning contributing to a theory of objective knowledge. Regarding Dubin's theory building model, Holton and Lowe (2007) observed,

> Dubin's model best fits within the functionalist paradigm. Dubin (1969/1978) tries to make sense out of the observable world by ordering the relationships among elements that constitute the theorist's focus of attention in the real world. The variables or units identified by the theorist, along with their interaction of these variables, the

development of hypotheses to test, and the refinement of the theory are all part of the functionalist paradigm (p. 302).

Reynolds (1971) informed us, "The theory-then-research approach reflects the assumption that scientists impose their description on any phenomenon that is studied. Scientific activity is the process of *inventing* theories (formalizing an idea in axiomatic or causal process form) and then testing the usefulness of the invention" (p. 150). As such, Dubin's functionalist research model will be retained as a theory-then-research theory building model in this study. Utility of the functionalist paradigm for this study is in describing structure and function of an organization as a social subperformance system that operates in a larger social performance system context.

In addition to Holton and Lowe (2007) categorizing Dubin's model into the functionalist paradigm, he critically noted, "Unfortunately, Dubin (1969/1978) does not define a research process for implementing his theory building model. That is, while he defines the components of theory, he does not fully explain the *process* a researcher should use to construct those components. Researchers attempting to implement his model are left with unanswered questions about the process for creating the components he specifies" (p. 298). These unanswered questions regarding the theory building processes caused this researcher to critique Dubin's connection between theory building philosophy and theory building research. Specifically, Dubin (1968/1978) and Chermack (2004b) were silent on the post-positivist theory building philosophy used in their theory building models. Therefore, in order for this study to build on extant SP theory, this study had to identified and critiqued the post-positivist theory building philosophy used in Dubin's theory building model.

The defined theory building components of Dubin's (1969/1978) hypothetical model consist of two research components: theoretical research and empirical research. Whereas Dubin's theory building model contributed explicitly to single-level phenomenon, the aim of this study is to contribute to MLTB, interpretive theory building research method through a systems lens by integrating "more than one level of conceptualization and analysis" (Klein & Kozlowski, 2000b, p. 223) into one theoretical framework. Additionally, an alternate theory building philosophy has to be identified and adopted for this study in order to attain an alternate perspective of the phenomenon of interest: scenario planning. An alternate theory building philosophy will be explored in this study in order to capture interpretive processes of SP as the phenomenon of interest. It is imperative that the theory building philosophy chosen for this study be explicitly made to serve as the guidepost for designing this MLTB, interpretive model and too inform future researcher's conducting empirical research using this theoretical model.

A Theory Building Philosophy for Scenario Planning Phenomenon

Laszlo (1972) posited the theory building, "…model and phenomena must be isomorphic in the strategic respects in the light of which the model was advanced" (p. 100). Adhering to Laszlo's isomorphic principle it is necessary to make explicit connections between theory building philosophy, theoretical research, and empirical research. As an initial step to aligning SP phenomenon with a theory building philosophy, one needs to understand the nature of SP knowledge. SP as the phenomenon of interest is concerned with local, practical reasoning and does not address general or universal knowledge. In 1983, Bernstein (1983) referenced Aristotle's description of *phronēsis* (practical reasoning) when

arguing against the application of Cartesian criteria (mind—body split or subject—object dualism generally applied in natural sciences and social sciences) in the human sciences.

Phronēsis was described as a type of reasoning that deals with choice and deliberation and as such is beyond the purview of scientific method (Bernstein, 1983). Bernstein (1983) observed, "Like Hegel, Gadamer seeks to show that there is a truth that is revealed in the process of experience (*Erfahrung*) and that emerges in the dialogical encounter with tradition" (p 152). "In effect, I am suggesting that Gadamer is appealing to a concept of truth that (pragmatically speaking) amounts to what can be argumentatively validated by the community of interpreters who open themselves to what tradition, 'says to us'" (Bernstein, 1983, p. 154). Bernstein's (1983) described how interpreters (i.e. SP participants) are to understand the hermeneutic circle,

> The circle of understanding is "object" orientated, in the sense that it directs us to the texts, institutions, practices, or forms of life that we are seeking to understand. It directs us to the sensitive dialectical play between part and whole in the circle of understanding. Many standard (and pre-Heideggerian) characterizations of the hermeneutic circle focus exclusively on the relation of part to whole in the texts or phenomena which we seek to understand. No essential reference is made to the interpreter, to the individual who is engaged in the process of understanding and questioning, except insofar as he or she must have the insight, imagination, openness, and patience to acquire this art—an art achieved through practice. There is no determinate method for acquiring or pursuing this art, in the sense of explicit rules that are to be followed. Or we might say that rules here function as heuristic guides

that gain their concrete meaning by appealing to exemplars of such hermeneutical interpretation (p 135).

Bernstein (1983) offered the hermeneutic circle as a process for man (as interpreters) to use when risking and testing prejudgments and prejudices formed through a fusion of horizons,

> Where do prejudices come from? They are themselves handed down from the traditions that shape us and that are constitutive of the historicity of our being….But there is also an *anticipatory* or future-orientated dimension to all prejudgments. This is already indicated by Heidegger's linguistic emphasis on fore-having, fore-sight, and fore-conceptions. All understanding is *projective*. To accomplish "an understanding is to form a project [*Entwurf*] from one's own possibilities." In short, prejudgments and prejudices have a threefold temporal character: they are handed down to us through tradition; they are constitutive of what we are now (and are in the process of becoming); and they are anticipatory—always open to future testing and transformation (pp. 140-141).

Bernstein (1983), described Gadamer's philosophical hermeneutic project in this way,

> It is an exemplar of effective-historical consciousness; the fusion of horizons; the positive role of temporal distance; the way in which understanding is part of the process of coming into being of meaning; the way in which tradition "speaks to us" and makes a "claim to truth" upon us; and what it means to say that "the interpreter dealing with a traditional text seeks to apply it to himself (p. 145).

We are reminded by Bernstein (1983) that, "The appeal to truth—a truth that enables us to go beyond our own historical horizon through a fusion of horizons—is absolutely essential in order to distinguish philosophical hermeneutics from a historicist form of relativism" (p. 151).

It was Gadamer (1965/1975) who believed practical and political reason could only be transmitted dialogically and argued, "Both rhetoric and the transmission of scientific knowledge are monological in form; both need the counterbalance of hermeneutical appropriation, which works in the form of dialogue" (p. 316). Like the philosophical hermeneutic project, SP participants are concerned with practical and political reasoning. For the purpose of this study, the ontological orientation of SP participants as a mode of being (existential) in the world will be interpretively understood through the philosophical hermeneutic project. Thus, a theory building methodology that accommodates space for hermeneutic circle processes is needed. Cognitive mapping research affords the theorist-researcher first-person entry into the hermeneutic circle of SP participants initiating the substantive theory building process. However, of philosophical hermeneutic philosophy authors (Gadamer, 1965/1975; Heidegger, 1986) reject the idea of philosophical hermeneutic being a research method meaning it never crosses into the research domain. Based on their dogmatic logic, this interpretive study turns to grounded theory's constant comparative method for an interpretive, inductive theory building method. With a theory building philosophy identified the next step in explaining interpretive SP theory building by SP participants is to present cognitive mapping and grounded theory prior to synthesizing a MLTB model.

Synthesizing Multilevel Views into Dubin's Single-level Theory Building Model

Theory building is not being viewed from Dubin's (1969/1978) post-positivist, hypothetical-deductive theoretical research framework operationalized by quantitative methods that contribute to objective knowledge. A point of departure from Dubin's model is needed in order to understand SP as the phenomenon of interest through a multilevel theory building model. For this study, MLTB begins with a theoretical research model developed by Robert Dubin (1969/1978) and the task of incorporate MLTB principles into the model. The first proposed modification to Dubin's (1969/1978) single-level, theory-then-research model is to infuse Kozlowski and Klein's (2000) MLTB principles throughout the theoretical and empirical research components of the model. Kozlowski and Klein's work when infused into Dubin's model provisions the theory building model with explicit MLTB connections. With MLTB principles incorporated into Dubin's (1969/1978) theory building model the revised model is enabled to move beyond single-level theory building, but still needs to factor in guidelines for collective MLTB constructs into the theory building model.

An organization, in this study, is represented as a social subperformance system where an organization's mission is accomplished through its human workforce. Therefore, a second proposed revision to Dubin's (1969/1978) model will be to incorporate Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs throughout the theoretical and empirical research components of the model. Morgeson and Hofmann's work enables theory building constructs occurring within and between individuals, work groups, and organizations. Provisioning guidelines for collective MLTB constructs into Dubin's model introduces yet another point of departure from Dubin's post-positivist, single-level theory

building model and enables theoretical and empirical research components of the model to account for multilevel social processes during theory building. If a theorist-researcher removes the post-positivist philosophy from Dubin's (1969/1978) theory building model and Chermack's (2003b, 2004b) SP theory, as well as quantitative analysis in the proposed theoretical research model, a space is created for an alternate theory building philosophy and alternate method to operationalize a new MLTB, interpretive model.

A philosophical hermeneutic philosophy theory building orientation can be embraced to accomplish interpretive research objectives for this study. In order to operationalize the revised MLTB model to produce interpretive outcomes it will be necessary for quantitative research in the empirical research component of Dubin's theory building model to augment cognitive mapping (individual and collective) research instead of serving as the primary research technique. Cognitive mapping research techniques will be used by SP participants and theorist-researchers at several stages of SP practice to include: the pre-scenario construction phase where individual-level (to map "as is" operational context) mapping serve as building blocks influencing scenario construction; post-scenario construction phase (individual- and collective-cognitive mapping of multiple, plausible contextual future realities) during scenario analysis working group sessions. The resulting theory building model will allow SP participants to pull (ground) organization-related scenarios through the proposed MLTB model to produce interpretive outcomes.

Although testing the proposed MLTB model is beyond the scope of this study, it is necessary to make explicit MLTB units of analysis for future empirical research. Rousseau (1985) informed organizational scientist, "…Multi-level models postulate relationships

among variables which apply to *two or more levels*…This requirement of formal identity differentiates multi-level models from analogies" (p. 16). Regarding SP phenomenon, MLTB model units of analysis involve within and between units of analysis considerations. Therefore, the theorist-researcher needs to be orientated primarily toward organization-level performance as the focal unit of analysis. The hierarchical structure from which the organization of interest receives goods/services or supplies goods/services to as customer base determines superior/subordinate units of analysis, respectively. A superior unit of analysis will be considered the society in which the organization functions. Likewise, work groups and individuals of an organizational structure are considered subordinate units of analysis. After making explicit MLTB units of analysis for the researcher, it is necessary to consider how to operationalize interpretive outcomes of the proposed theory building model. Prior to discussing MLTB considerations a summary of Dubin's post-positivist, single-level theory building model will be made.

In summary, the proposed theory building revisions to Dubin's (1969/1978) post-positivist, single-level, hypothetical-deductive theoretical research theory building model include:

- Adding a theory building philosophy or theoretical paradigm component to Dubin's two component theory building model: theoretical research and empirical research;
- Incorporating Kozlowski and Klein's (2000) MLTB principles into Dubin's model;
- Infusing Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs into Dubin's model;

- Establishing SP-related MLTB units of analysis for use during empirical research; and
- Inserting cognitive mapping research into the empirical research component of Dubin's (1969/1978) theory building model to operationalize SP interpretive, first-person data collection and analysis processes and outcomes. Quantitative research will be used to augment cognitive mapping research when operationalizing functionalist paradigm levels units of analysis

These five proposed revisions to Dubin's single-level, post-positivist theory building model will result in a MLTB model capable of operationalizing functional paradigm, as well as interpretive aspects of scenario planning The next consideration of this study is to describe Dubin's (1969/1978) theory building model for applied disciplines.

Dubin's Theory-Then-Research: Theory Building Model for Applied Disciplines

According to Dubin, (1969/1978), "A theory is a model of some segment of the observable world….[that] describe[s] the face appearance of the phenomenon in such terms as structures, textures, forms, and operations…it also describes how the phenomenon works, how it functions" (p. 223). Torraco (1997) argued from an HRD perspective, "Theory building is the process of modeling real-world phenomena (p. 123). Torraco also noted, "The literature available to guide theorists on methods of theory building is sparse and uneven" (p. 125). With regard to theory building research Lynham (2000) noted, "The topic only began to draw attention in HRD since the early 1990s, and somewhat increasingly so since 1996" (p. 160). Additionally, Lynham (2000) argued it is, "…generally recognized in the literature that the development of good HRD theory and theory-building methods are essential for

advancing the maturity, credibility, and professionalism of both thought and practice in HRD" (p.163). Torraco (2005) characterized theory building as a product of scientific research in stating that, "theory development can be considered a research process for creating theory" (p. 352). In 2007, Swanson reported, "Most applied disciplines are attempting to make significant advancements in articulating the theoretical foundation of their fields of study" (p. 321). So what criteria exist for development and evaluation of applied theory building research methods? Holton and Lowe (2007) put forth, "Dubin's [theory building research] methodology has received considerable attention in the HRD literature as a leading hypothetico-deductive method" (p. 298). Regarding a general introduction to theory and theory building, most HRD theory building scholars (Chermack, 2004a, Chermack & Lynham, 2002a, 2002b, 2005b; Dooley, 2002; Egan, Upton, & Lynham, 2006; Gioia & Pitre, 1990; Holton & Lowe, 2007; Lynham, 2002; Reynolds-Fisher, 2000; Swanson, 2003; Swanson & Torraco, 2002; Torraco & Holton, 2002; Tuttle, 2002; Upton, 2006; van de Ven, 1989; Weick 1989, 1995; Whitten, 1989) are familiar with Robert Dubin's (1969/1978) eight-step theory building research methodology and have either fashioned their theory building after this model or juxtaposed their theory against said model.

In Dubin's seminal book titled *Theory Building*, he was concerned with interaction between theory building and empirical research (Dubin, 1969/1978). We learned from Dubin the content and process of a hypothetico-deductive theoretical model to include "an alternate strategy which involved an inductive approach to theory building" (Dubin, 1969/1978, p. 219). Dubin's (1969/1978) dissected his deductive-hypothetical theory-building method into "two component parts" (p. 14): theoretical research and empirical research with each

component part constituted by four specific steps. Dubin (1969/1978) was careful, "…to distinguish theoretical research, meaning theory building, and empirical research, meaning theory testing" (p. 223) in order to examine their interaction. The eight elements of Dubin's theory building model consisted of a:

- Theoretical research component: (a) units of a theory, (b) laws of interaction, (c) boundaries, (d) system states; and
- Empirical research component: (e) propositions, (f) empirical indicators, (g) hypotheses (h) and testing (Dubin 1969/1978).

Dubin made an, "…explicit conclusion that theory and research are separable as distinctive operations but inseparable as necessary complementary components of scientific endeavor" (p. 224).

Step One – the Units of a Theory

Dubin (1969/1978) offered several initial, "distinctions between paired characteristics of units in order to draw out their consequences for the manner in which we build theories" (p. 27). Theoretical research meaning theory building begins with an analysis of paired theory building characteristics. Distinctions offered were between: concepts and units, things and properties of things, between unit and event, attribute and variable, real and nominal, primitive and sophisticated, and between collective and member (Dubin, 1969/1978).

Concept and unit

Dubin (1969/1978) advocated for concrete, neutral terms to define theoretical units of a theory as compared to terminology found in a dictionary which can offer circular definitions or multiple meanings to a word definition. Dubin put forth, "…confusion as to

meaning of *concept* has led me to employ the more neutral term *unit* to designate the things out of which theories are built" (p. 38). Whereas the term, "…concept may also mean whole theories or laws of science or even 'conceptual frameworks'…." (p. 38). Dubin also made it explicitly clear, "Units are not theories" (p. 38).

Thing or property of thing

From a behavioral science perspective, Dubin (1969/1978) posited, "…we build our theories about the properties of things rather than about the things themselves. We focus our theories upon selected characteristics of objects rather than upon the objects" (p. 40). Dubin also posited, "probably the most important consequence of dealing with properties of things as the units of theory is the release of imagination that it affords" (p. 41). The imagination Dubin referred to was regarding, "…opportunities to test relationships with other properties…." (p. 41).

Unit versus event

Dubin (1969/1978) avered, "Theory…is concerned with modeling the processes and outcomes of particular units interacting in systems…." (p. 43). Additionally, Dubin explained,

The reason for distinguishing between a unit and an event is twofold: (1) We want to distinguish certain types of historical explanation from theory, and (2) we want to dispose of the nagging problem of the uniqueness of all things at each point in time (p. 42).

Attribute and variable

Dubin (1969/1978) noted, "Units of a theory may be either attributes or variables" (p. 44). Dubin defined attribute in this way, "an attribute is a property of a thing distinguished by

the quality of being present" (p. 44). Whereas Dubin posited, "a variable is a property of a thing that may be present in degree" (p. 44). Dubin was clear that both attributes and variables have their place in theory building.

Real and nominal

Dubin (1969/1978) avered, "We will agree that units of a theory, as properties of things, can be called real units or nominal units" (pp. 50-51). Dubin also noted the distinction between real and nominal units is the researcher's probability of finding empirical indicators to represent said units. Nominal units, while acceptable characteristics of a theoretical unit, are also understood empirical indicators at not considered available to represent this unit.

Primitive and sophisticated

Dubin (1969/1978) put forth, "What I will mean by a *primitive* unit is that it is undefined. This distinguishes any such unit from another category I will call *sophisticated* units, by which I mean that they are defined units" (p. 53).

Collective and member

In Dubin's (1969/1978) final distinction between characteristics of theoretical units, he noted, "It is the difference between a class considered as a unit and the individual members of that class being treated as units" (p. 55). Dubin saw value in, "…treat[ing] one or more of the individual things as a unit by itself, independently by the fact that it shares membership in some collective unit by virtue of having at least on characteristic in common with all other members" (p. 55).

Types of Theoretical Unit Relationships

After making quantification assertions regarding theory building theoretical unit types represented in Table 8, Dubin (1969/1978) undertook quantification of theoretical unit relationships describing association between two concepts and causal relationships between concepts.

Table 8 Types and Characteristics of Theoretical Units.

Types of Units	Characteristics of Theoretical Units
Enumerative Units	"An enumerative unit is a property characteristic of a thing in all its conditions" (Dubin, 1969/1978, p. 58)
Associate Units	"An associate unit is a property characteristic of a thing in only some of its conditions" (Dubin, 1969/1978, p. 60).
Relational Units	"A relational unit…identifies a property of a thing by calling attention to the fact that the property is derivable from at least two other properties" (Dubin, 1969/1978, p. 62).
Statistical Units	"A statistical unit is a property of a thing that summarizes the distribution of that property in the thing" (Dubin, 1969/1978, p. 64)
Summative Units	"Analytically, a summative unit is one having the property that derives from the interaction among a number of other properties" (Dubin, 1969/1978, p. 66). "A central feature of a summative unit is that it seems to draw together a number of different properties of a thing and gives them a label that highlights one of the more important" (Dubin, 1969/1978, p. 66).

Source: Chermack, 2003b, p. 206.

The previous section discussed discovery of theoretical unit relationships. In Table 9, Dubin's (1969/1978) guidelines and restrictions on mixing unit types will be presented.

Table 9 Guidelines and Restrictions on Mixing Unit Types.	
Guideline 1	"A relational unit is not combined in the same theory with enumerative or associative units that are themselves properties of that relational unit" (Dubin, 1969/1978, p. 73).
Guideline 2	Where a statistical unit is employed, it is by definition a property of a collective. In the same theory do not combine such a statistical unit with any kind of unit (enumerative, associative, or relational) describing a property of members of the same collective. (Dubin, 1969/1978, pp. 73-74).
Guideline 3	Summative units have utility in education of and communication with those who are naïve in a field. Summative units are not employed in scientific models. (Dubin, 1969/1978, p. 78).

Source: Chermack, 2003b, p. 206.

After understanding types and descriptions of theoretical unit relationships, as well as guidelines and restrictions on mixing unit types as single indicators, the intersection of initial theoretical unit and theoretical unit relationships are annotated in Table 10 in the form of a matrix.

Table 10 Basic Theoretical Unit and Theoretical Unit Relationships.					
Theoretical Unit Types	Theoretical Unit Relationships				
	Enumerative	Associative	Relational	Statistical	Summative
Attribute					
Variable					
Real					
Nominal					
Sophisticated					
Collective					
Member					

Source: Chermack, 2003b, p. 206.

According to Kozlowski and Klein (2000) "…given the nature of organizations as hierarchically nested systems, it is difficult in practice to find single level relations that are unaffected by other levels. The set of individual-level phenomena that are invariant across

contexts is likely to be very small" (p. 13). In addition to Dubin's (1969/1978) description of theoretical unit types, organizational phenomenon requires constructs capable of capturing emergent organization behavior. Kozlowski and Klein (2000) argued, "Despite the challenges, however, precise explication of these emergent processes lays the groundwork for operationalizing the construct…." (p. 18). Table 11 simply illustrates collective theoretical constructs and any emergent properties associated with the construct. For example top-down organization processes represent the influence higher-level context exert on lower-level units (Kozlowski & Klein, 2000). Whereas, bottom-up organization process represent how lower-level properties emerge toward upper-level constructs forming collective phenomena (Kozlowski & Klein, 2000).

Table 11 A Typology of MLTB Units with Emergence Properties.

Types of Unit-Level Constructs	Describes Entities Composed of Two or More Individuals such as Dyads, Groups, Functions, Divisions, Organizations (Kozlowski & Klein, 2000)
Global Unit	"Global unit properties are single-level phenomena" (Kozlowski & Klein, 2000, p. 29). "Global properties are observable, descriptive characteristics of a [within level] unit. Global properties do not emerge from individual-level experiences, attitudes, values, or characteristics" (Kozlowski & Klein, 2000, p. 33).
Shared Unit	"…shared properties of a unit emerge from individual members' shared perceptions, affect, and responses" (Kozlowski & Klein, 2000, p. 33). Shared unit properties are essentially similar across levels (that is, isomorphic), representing composition forms of emergence" (Kozlowski & Klein, 2000, p. 29).
Configural Unit	"Configural properties emerge from individuals, but do not coalesce as shared properties do" (Kozlowski & Klein, 2000, p. 34). "Configural unit properties are based on compilation models of emergence" (Kozlowski & Klein, 2000, p. 32).

By combining basic theoretical units and advanced configural theoretical units in the same theory building model the theorist-researcher is better equipped to attend to phenomena

occurring within and between organizations. Synthesizing and extending Dubin's (1969/1978) extant single-level theory building model with MLTB principles (Kozlowski & Klein, 2000; Morgan & Hoffman, 1999) begins with creating a space of unit-level constructs.

Step Two – Laws of Interaction Among Theoretical Units

In cases where no interaction exists between theoretical units, the resulting relationship is a lawful theoretical research statement. Dubin (1969/1978) avered, "In one sense the statement of no relationship between two units is a lawful one, but it is in the form of a null statement" (p. 84). For Dubin, "That portion of a statement that has any meaning at all as a law is the statement of relationship, not the designation of the units involved" (p. 90). Thus, Dubin uses the term *laws of interaction* to explicate, "…linkages among units of a [theoretical] model". It should also be noted Dubin did not use law of interaction to mean universal laws or natural laws in his theory building model. Dubin informs theorists/researchers that, "It should be clear that if you understand the *structure* of a statement labeled a law, you realize that it is composed of two analytically distinct parts, -- *units* that are connected or linked by a *law of interaction*" (p. 91). In defining laws of interaction Dubin argued, "Until such interactions [or relationships among units] are built into the model, they are only taxonomic models of units" (p. 91).

Dubin (1969/1978) dismissed the notion of causality in theory building, "Empirically relevant theory in the behavioral and social sciences is built upon an acceptance of the notion of relationship rather than of the notion of causality" (p. 96). In essence Dubin's accounted for laws of interaction from a mathematical perspective as, "…one of accounting for variance in one unit by specifying a systematic linkage of this unit with at least one other" (p. 92). In

Dubin's theory building model, he expressed three categories among laws of thought for expressing relationships between units:

- Categoric interactions:
- Sequential interactions; and
- Determinant interactions

Categoric interactions

"A categoric law of interaction is one that states that values of a unit are associated with values of another unit. The association is in the form of the presence or absence of the respective values for the two units" (Dubin, 1969/1978, p. 98). In recognition of a categoric law of interaction the words *associated with* are employed in a relationship statement (Dubin, 1968/1978). Examples or a categoric statement could be, there is a greater-than-chance of probability A is associated with B or there is a less-than-chance A is associated with B. Dubin (1969/1978) informed us, "What is not recognized when categoric laws of interaction are employed is that four laws are usually required for a complete specification of the associated values of two units joined by the laws" (p. 98) when a nonzero values for A or B. According to Dubin, "Categoric laws are symmetrical. It does not matter whether one or the other of the units comes first in the statement of the law" (p. 100). Dubin estimated, "…that probably three-quarters of all laws of interaction in the literature for social and behavioral sciences are expressed as categoric laws of interaction" (p. 98).

Sequential interactions

"The sequential ordering of the values of the units employed is the only meaning we can attach to the law of interaction, however tempting it may be to view this temporal

sequence as a causal one" (Dubin, 1969/1978, p. 101). In Dubin's understanding, "A sequential law of interaction is one always employing a time dimension" (p. 101). For Dubin, "The [asymmetric] time lapse is the crucial operational criterion by which the forcing variable is designated" (p. 105).

Determinant interactions

"A determinant law of interaction is one that associated determinate values of one unit with determinate values of another unit" (Dubin, 1969/1978, p. 106). According to Dubin, "The essential components of a determinant law are two: (1) the specific relation is set forth, and (2) determinant values are assigned to the units related by the law of interaction" (p. 107). In Dubin's empirical research method, mathematical expression is the most common representation of laws of interaction. For example Dubin (1969/1978) posited, "The most common feature that identifies a determinant law is that it may be drawn as a line, curve, plane, surface, a structure of linked points (as in graph theory), or matrices of fixed-position values (as in matrix algebra)" (p. 107).

Efficiency of a law

After defining the laws of interaction, Dubin (1969/1978) clarifies how one draws a distinction between within a theoretical model through two the purposes of science: prediction and understanding. The four general level of efficiency described by Dubin included:

- Presence-absence (lowest level of efficiency);
- Directionality;
- Covariation; and

- Rate of change (highest level of efficiency)

By efficiency of a law Dubin meant, "…the range of variability in the values of one unit when they are related by a law to the values of another unit" (p. 109).

Criteria for evaluating the laws of interaction

"The issue of parsimony of laws of interaction has solely to do with the *number* of laws of interaction by which units of the model are linked" (Dubin, 1969/1978, p. 113). Dubin also noted, "Parsimony in the number of laws of a theoretical model is determined by the *minimum* number of laws necessary to relate all the units of the system" (p. 113). The application of parsimony to theory building would recognize determinant laws to be more parsimony than categoric laws (Dubin, 1969/1978).

Levels of analysis

Levels of analysis concerns from Dubin's (1969/1978) micro theorist perspective meant, "In relation to levels of analysis, laws of interaction are always *intra*level in location" (p. 121). Dubin stated, "Remembering the previously established distinction between outcome and process, we are able to see that there are *not* laws of interaction that link up units *between* levels of analysis" (p. 121). Dubin concluded, "…that there are no laws of interaction connecting levels of analysis but that there are units (summative ones) that provide such linkages" (p. 121). The single criteria for judging laws of interaction reside in the concept of parsimony. Meaning one judges the laws of interaction quality through a minimalist lens. In other words, the minimal number of laws of interaction to explicitly state relationships among theoretical units is considered superior in theory building from a post-positivist tradition.

Step Three – Boundaries of a Theory Building Model

"A theoretical model is said to be bounded when the limiting values on the units compromising the model are known" (Dubin, 1969/1978, p. 126). Dubin (1969/1978) did not argue for a systems analysis in discerning between open or closed systems. Dubin posited, "The distinction between open and closed systems, as conventionally set forth, depends on *exchange over the boundary* of the system between itself and its environment" (p. 126). In fact, Dubin argued, "…that the logic of a system, and the theoretical model representing this system, in nowise depends upon the openness or closedness of its boundary" (p. 126). Dubin did conclude that limiting values can be determined by internal and external boundary criteria. "Interior criteria are those derived from the characteristics of the units and laws employed in the model" (p. 128). External boundary setting was defined by Dubin when, The most common encountered circumstance in which an exterior criterion determines the boundaries of a model is the one in which the model builder admits, after testing the model empirically, that he cannot account for the empirical results without introducing what he calls an intervening variable into the model with which he started (p. 133).

Dubin (1969/1978) also pointed out, "Often an exterior criterion is employed to establish the boundary but then plays no further role in the model. Such a criterion is only for the purpose of determining the boundary" (p. 133). "It is important to specify the boundary of the theoretical model because comparability among studies depends on insuring that the domains of separate studies are, in fact, overlapping domains" (p. 134). The absence or presence of boundary setting criteria influence the theoretical domain of a theory. Dubin defined domain in this manner, "…the domain of a model as being the territory over which

we can make truth statements about the model and, therefore, about the values of the units composing the model" (p. 135). As put forth by Dubin, "In general, the more boundary-determining criteria there are, the greater the homogeneity of the domain covered by a model. Conversely, the fewer the number of boundary-determining criteria, the more heterogeneous is the domain" (p. 136). "When the theoretical model is constructed in the absence of any prior empirical knowledge, the boundaries of the model are determined logically" (p. 141).

Step Four – System States of a Theory Building Model

After defining theoretical units, laws of interaction, and boundaries; Dubin (1969/1978) described the final step in theoretical research: system states. Dubin posited, "We need one more building block of a scientific model, namely, system state, in order to handle the fact that all regions within the boundary of a system are not homogeneous with each other" (p. 143). This theoretical research section will define a system state, as well as distinguish between a system state and system outcome. Dubin defined a state of a system, "by three features:

- All units of the system have characteristic values;
- The characteristic values of all units are determinant; and
- This constellation of unit values persists through time" (p. 144).

The essential notion is the system as a whole has distinct features per system state. When units within a theory are undetermined one may discern a system outcome, but not a systems state. Dubin argued, "…a system state is apprehended only by knowing the characteristic values of all units of the system" (p. 144). "It should be clear that not all models specify system states" (p. 149). Figure 1 represents a functional system. Dubin (1963)

designed a matrix that displayed two salient features of a theoretical social system: states of system (G) and functions composing systems (F).

Figure 1 A Functional System.

States of System (G)	***Functions Composing System (F)***					
	1	*2*	*3*	*4*	*5*	*...*
α	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +
β	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +
γ	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +
δ	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +
e	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +
…	0 or +	0 or +	0 or +	0 or +	0 or +	0 or +

A zero (0) entry indicates that the function is *not* operative for that state of the system, while a plus (+) entry indicates that the function is operative.

Source: Dubin, 1963, p. 16.

When a model specifies system states, it will meet three criteria of system states: inclusiveness, determinant and persistence. “The first criterion of a system state is that all units of the system have a value or distinctive range of values in that state” (Dubin, 1969/1978, p. 147). According to Dubin, “A second criterion of a system state is that the individual units have *determinant values* in it” (p. 147). “The third criterion of a system state is that the state *persist* through some period of time, i.e., have a state life” (p. 149). Regarding system states, Dubin concluded, “A system state that meets these three criteria is by virtue of that fact a description of the *system as a whole*” (p. 149).

Step Five – Propositions of a Theory Building Model

"Propositions are…concerned with predictions about the values of units in the system" (Dubin, 1969/1978, p. 159). Propositions may be defined as truth statement about a theoretical model (Dubin, 1969/1978). A proposition is a truth statement about a theoretical model when the scientific model is fully specified in: units, laws of interaction, boundary, and system states (Dubin, 1969/1978). According to Dubin (1969/1978), "The only criterion of consistency that propositions of a model need to meet is the criterion that their truth be established by reference to only one system of logic for all the propositions set forth about the model" (p. 160). "Thus, all propositions of a model satisfy logical rules and not empirical rules to establish their truth" (p. 164). The most common form that propositional statements take is a "if…then" format (Dubin, 1969/1978) and can be linked to communicate:

- If (a), then (b);
- If (b), then (c);
- If (c), then (d); etc.

Truth statements or proposition may be classified into three types according to Dubin (1969/1978):

- propositions may be made about the values of a single unit of the model,
- propositions may be predictions about the continuity of a system state that in turn involves a prediction about the conjoined values of all units in the system, and
- propositions may be predictions about the oscillation of the system from one state to another that again involves predictions about the values of all units of

the system as they pass over the boundary of one system state into another (p. 166).

There are no limit to the number of propositions a scientific model may have and can be mathematically represented by a standard prediction equation $Y = a + bX$. While an infinite number of propositions is plausible, it is not desirable and a parsimony criteria needs to be applied to theory building.

Propositions are different from laws of interaction, in that, laws of interaction define lawful relationships among theoretical units and whereas propositions state the predicted values of theoretical units (Dubin, 1969/1978). Dubin (1969/1978) informed us, "Given a theoretical system, the application of a set of logical rules will produce the propositional statements that must be true of the system" (p. 170).

Step Six – Empirical Indicators of a Theory Building Model

"An empirical indicator is an operation employed by a researcher to secure measurement of values on a unit" (Dubin, 1969/1978, p. 182). Dubin (1969/1978) posited two principal empirical indicator criteria,

- The operations involved in the relation between observer and the apparatus used for observing are explicitly set forth so that they may be duplicated by any other equally trained observer and
- The observing operation produces equivalent values for the same sample when employed by different observers (p. 183).

The empirical indicator criteria cited above have been also been called: operationism and reliability (Dubin, 1969/1978). Dubin (1969/1978) posited, "…operationalism relates to

empirical test of propositions and not the formulation of the model from which the propositions is derived" (p. 184). For Dubin, "The reliability of a given empirical indicator is, therefore, a measure of the degree to which the operation involved is securing the value is independent of a particular observer and his idiosyncratic relationship to the measuring apparatus" (p. 185).

Step Seven – Hypotheses of A Theory Building Model

"An hypothesis may be defined as the predictions about values of units of a theory in which empirical indicators are employed for the named units in each proposition" (Dubin, 1969/1978, p. 206). Regarding the structure of a scientific theory Dubin (1969/1978) informed us a, "… hypothesis is not an ad hoc question to be answered by research but is rather a prediction of values on units that in turn are derivable from a proposition about a theoretical model" (p. 206). It should also be noted that hypothesis are homologous to the proposition for which it represents (Dubin, 1969/1978). "The general rule is that a new hypothesis is established each time a different empirical indicator is employed for any one of the units designated in a proposition" (p. 209).

Step Eight – Test of a Theory Building Model

Having built a theoretical model provides the researcher with one or more predictions to test by marshaling data. During the empirical research phase of theory building, testing is conducted in order to test the propositions of a theoretical model (Dubin, 1969/1978). The researcher provides a theorist with confirmation or disconfirms a theoretical model when it does not represent the empirical world. Where empirical research does not prove the

adequacy of the theoretical model, the theorist needs to re-evaluate the theoretical model to discern how to align said model with the empirical world. According to Dubin (1969/1978),

> The test of an hypothesis always relates back to the theory from which it derived. The rejected hypothesis requires the modification of the generating theoretical model or the reference of the results to an alternate model. The confirmed hypothesis requires a renewed search for further tests of the theory (p. 16).

Dubin (1969/1978) recognized and explicated, "…Science [is] a never-ending process of data gathering and of reprocessing old data, of theory building in areas of curiosity where models had not previously existed, and of reconstructing old theories that no longer encompass in their predictions the data they purport to model" (p. 222).

Table 12 highlights Dubin's hypothetico-deductive theoretical research and empirical research method for applied disciplines providing a visual aid to clarify Dubin's two component theory-research cycle. Dubin's theory building model is centered in a functionalist paradigm and post-positivist epistemology where he demonstrates the interaction between theory research meaning theory building and empirical research meaning theory testing.

Table 12 Dubin's (1969/1978) Post-positivist, Single-level Theory Building Research Model.			
Two Major Components to Model	Theory Development Elements	Dubin, 1969/1978	Eight-Step Theory-Research Cycle (Swanson, 2007, p. 325)
Hypothetico-deductive Metho	Conceptual Framework	Theory Building Steps	Theoretical Research side of the Theory-Research Cycle
THEORETICAL RESEARCH MEANING THEORY BUILDING (Dubin, 1969/1978, p. 223)	Units of a theory	Step1	"Units of a theory are properties of things rather than the things themselves" (Dubin, 1969/1978, p. 51). Types of units: Enumerative units, associative units, relational units, statistical units, summative unit, complex units (Dubin, 1969/1978).
	Laws of interaction (Linkages among units)	Step 2	"The linkages among units of a model will be labeled it *laws of interaction*" (Dubin, 1969/1978, p. 87). "The term *law of interaction* is employed to focus attention on the relationship being analyzed" (Dubin, 1969/1978, p. 88).
	Boundaries	Step 3	"A theoretical model is said to be bounded when the limiting values on the units comprising the model are known" (Dubin, 1969/1978, p. 127). "It is a convention of systems analysis to distinguish between open and closed systems "(Dubin, 1969/1978, p. 127).
	System states	Step 4	"The essential notion of a system state is that the state as a whole has distinctive features when it is in a state of the system" (p. 148). A system state is a state of the system as a whole" (Dubin, 1969/1978, p. 150). The three criteria of system states -- *inclusiveness* of consequence for values of all units of the system, that the values are all *determinant* values, and the *persistence* of the state over some relevant time period—together describe the conditions that must be met to deal with system states (p. 154)..

Table 12 Continued.			
Two Major Components to Model	Theory Development Elements	Dubin, 1969/1978	Eight-Step Theory-Research Cycle (Swanson, 2007, p. 325)
Analytic Technique: Quantitative-Empirical Method	Generates Objective Knowledge	Theory Testing Steps	Empirical Research side of the Theory-Research Cycle
EMPITICAL RESEARCH MEANING THEORY TESTING (Dubin, 1969/1978, p. 223)	Propositions	Step 5	"One purpose of any scientific model is to generate predictions about the empirical domain it represents" (Dubin, 1969/1978, p. 165). A proposition, then, is a truth statement about a model that is fully specified in its units, laws of interaction, boundary, and system states. Any truth statement that can be made about such a system is a proposition of the system. (Dubin, 1969/1978, p. 166). "…all propositions are predictions of the values on one or more units in the model" (p. 183).
	Empirical indicators of key terms	Step 6	"An empirical indicator is an operation employed by a researcher to secure measurements of values on a unit. An empirical indicator is therefore a procedure employed by a researcher when he says "This value, which I am measuring by this following procedures, stands for the value of the thing, or unit, I have built into my model" (Dubin, 1969/1978, p. 184-185). There are two principal criteria of an adequate empirical indicator: (1) the operation or operations involved in the relation between observer and the apparatus he uses for observing may be explicitly set forth so that it or they may be duplicated by any other equally trained observer, (2) the employment of the observing operation produces equivalent values for the same sample when employed by different observers. (Dubin, 1969/1978, p. 185)
	Hypotheses	Step 7	"An hypothesis may be defined as the predictions about values of units of a theory in which empirical indicators are employed for the named units in each proposition" (Dubin, 1969/1978, p. 212). "Every hypothesis is homologous with the proposition for which it stands" (p. 213).
	Testing	Step 8	"A test of each such proposition will prove the most adequate test of the theory as a whole in the most economical fashion possible" (Dubin, 1969/1978, p. 217). Empirical test are classified into three categories: Extensive, intensive test, and inductive test. (Dubin, 1969/1978).

With Dubin's post-positivist, single-level theory building model described, the next consideration for this study is to consider Kozlowski and Klein's principles of MLTB research for synthesis into Dubin's theory building model.

Kozlowski and Klein's Central Principles of MLTB and Empirical Research

To explore multilevel theory development frameworks is to concurrently study multiple disciplinary approaches to research such as psychology, sociology, economics, general systems theory. Levels epistemological foundations and several basic assumptions are tightly coupled to general systems theory (Bouling, 1956; Kozlowski & Klein, 2000; von Bertalanffy, 1956). Additionally, as the theorist move through multiple disciplines, multiple paradigms within and between disciplines they enter into a multilevel developmental framework as well. Kozlowski and Klein (2000) have noted, "The roots of the multilevel perspective are spread across different disciplines and literatures, obscured by the barriers of jargon, and confused by competing theoretical frameworks and analytic systems" (p. 4). In recognition that existing multilevel theory development frameworks were contained across disciplines, the focus of Kozlowski and Klein's work (2000) was to, "…explain fundamental issues, synthesize and extend existing frameworks, and identify theoretical principles to guide the development and evaluation of multilevel models" (p. 11).

Although evidence of multilevel theory building is noted back to the 1990s, there have been few explicit efforts at theory building. Multilevel theorizing by Kozlowski and Klein (2000) provided the research community with a theoretical framework of MLTB. Kozlowski and Klein (2000) defined the aim of MLTB in this way, "*The primary goal of the multilevel perspective in organizational science is to identify principles that enable a more*

integrated understanding of phenomena that unfold across levels in organizations" (p. 7). In fact, their work delineated twenty-one (21) principles to guide theorist in multilevel theory building. Kozlowski and Klein's work are categorized into principles that guide MLTB specification, operationalization, and empirical research. These MLTB principles will be explored in the following three sections.

Principles guiding MLTB

For ease of presentation Kozlowski and Klein (2000), "presented central principles of multilevel theory building and research organized around the *what, how, where, when,* and *why* (*and why not*) of multilevel theoretical models" (p. 12). The first guideline offered by Kozlowski and Klein (2000) is to, "fashion their theoretical models by focusing on the endogenous construct(s) of interest: What phenomenon is the theory and research attempting to understand?" (p. 12). Kozlowski and Klein (2000) avered, "The endogenous construct, or dependent variable, drives the levels, constructs, and linking processes to be addressed by the theory" (p. 12). According to Kozlowski and Klein (2000), "…careful explication of the phenomenon of interest…."serves to prevent "…misspecified theory". In other words, guidance is offered aimed at preventing collecting and analyzing data at the wrong level of the phenomenon of interest. Kozlowski and Klein's (2000) first principle reads, "Theory building should begin with the designation and definition of the theoretical phenomenon and the endogeneous construct(s) of interest" (p. 13). This principle is consistent with the interactionist perspective (Lewin, 1951) and their efforts to conceptualize and study organizations as multilevel performance systems (Kozlowski & Klein, 2000). It is also

obvious that Kozlowski and Klein's principle is tightly coupled to general systems theory and its holistic worldview.

While advocating for a MLTB perspective of organizational performance, the second guiding question centers on the phenomenon of interest possessing unifocal or multifocal origins and if they migrate between levels of a performance system. According to Kozlowski and Klein (2000) the MLTB theorist or researcher should understand, "…multilevel theory is neither always needed nor always better than single-level theory" (p. 13). Therefore, it is imperative that the theorists discern and explicitly state if and where the phenomenon of interest has processes that change across context-levels. An example of micro theorist would be psychologist whom would focus on individual-level process where constructs of interest do not vary within or between levels. Additionally, macro theorist such as sociologist may develop theoretical frameworks at a societal-level of a phenomenon of interest. Whereas, the multilevel theorist seeks to develop a theoretical framework with principles that help understand phenomena of interest across multiple levels of an organization. Kozlowski and Klein's (2000) second principle read,

> Multilevel theoretical models are relevant to the vast majority of organizational phenomena. Multilevel models may, however, be unnecessary if the central phenomena of interest (a) are uninfluenced by higher-level organizational units, (b) do not reflect the actions or cognitions of lower-level organizational units, and/or (c) have been little explored in the organizational literature. Caveat: Proceed with caution (p. 14)!

According to Kozlowski and Klein (2000) after establishing endogenous constructs of interest, "the theorist must specify how phenomena at different levels are linked" (p. 14). With an appreciation that the epistemological foundation for MLTB is anchored to general systems theory, it is important for the MLTB model to delineate nested or layered features of the model. Contextual influences have been described as top-down process where higher-level units may influence lower-level units (Kozlowski & Klein, 2000). Additionally, emergence descriptions would depict a relationship when a lower-level unit may influence higher-level units (Kozlowski & Klein, 2000). Kozlowski and Klein's (2000) third principle reads, "Virtually all organizational phenomena are embedded in a higher-level context, which often has either direct or moderating effects on lower-level processes and outcomes. Relevant contextual features and effects from the higher level should be incorporated into theoretical models" (p. 15).

In addition to levels being linked through contextual factors such as top-down or bottom-up relationships Kozlowski and Klein (2000) report, "many phenomena in organizations have their theoretical foundation in the cognition, affect, behavior, and characteristics of individuals, which—through social interaction, exchange, and amplification—have emergent properties that manifest at higher levels" (p. 15). Processes that fall within the emergent category include "composition" and "compilation" "that emerge to form collective phenomena" (Kozlowski & Klein, 2000, p. 15). Composition processes describe "phenomena that are essentially the same as they emerge upward across levels…that is, convergence of similar lower-level characteristics to yield a higher-level property that is essentially the same as its constituent elements" (p. 16). While compilation processes

describe "the combination of related but different lower-level properties—that is, the configuration of different lower-level characteristics to yield a higher-level property that is functionally equivalent to its constituent elements" (p. 16). It is "…precise explication of these emergent processes lays the groundwork for operationalizing the constructs…" (Kozlowski & Klein, 2000, p. 18). Kozlowski and Klein's (2000) fourth principle reads, "Many higher-level phenomena emerge from characteristics, cognition, behavior, affect, and interactions among individuals. Conceptualization of emergent phenomena at higher levels should specify, theoretically, the nature and form of these bottom-up emergent processes" (p. 18). Thus, the necessity of examining and describing relationship links in multilevel theory is established.

Having established processes that link between levels, we now focus on exploring ties that link organizational levels to units. We must ask, what is the level of analysis for the phenomenon of interest? Kozlowski and Klein (2000) put forth, "The answers to these questions specify the local entities—the specific organizational levels, units, or elements—relevant to theory construction" (p. 19). Levels issues are inherent in organizations, due to the fact that their structure is hierarchically nested. Additionally, "all but the smallest organizations are characterized by differentiation (horizontal division) and integration (vertical levels)" (Kozlowski & Klein, 2000, p. 19). Kozlowski and Klein caution that organizational boundaries can become fuzzy, because organizations are social systems and members may create boundaries that do not correspond with formal organizational structures. Kozlowski and Klein (2000) argued, "This can be problematic when the phenomena of interest are examined within formal units but are driven by informal processes that yield

nonuniform patterns of dispersion" (p. 19). Kozlowski and Klein's (2000) fifth principle read, "Unit specification (formal versus informal) should be driven by the theory of the phenomena in question. Specification of informal entities that cut across formal boundaries, or that occur within formal units and lead to differentiation, requires careful consideration" (p. 20). An additional principle regarding bond strength (Simon, 1973) is a determinant in linking levels of an organization.

Kozlowski and Klein's findings (2000) informed us,

> A social organization can be conceptualized as a set of subsystems composed of more elemental components that are arrayed in a hierarchical structure…and subsystems is determined by their bond strength, which refers to the extent to which characteristics, behaviors, dynamics and processes of another level or unit (p. 20).

The authors reported, "Proximal, included, embedded, and directly coupled levels and units exhibit more meaningful relations than distal levels or loosely coupled units" (p. 21). Juxtaposed to less meaningful relations means there will be less influence exhibited across levels. In cases where bond strength is weak perhaps due to multiple levels of between the influence and effected unit of an organization, bond strength may be difficult to detect. Kozlowski and Klein's (2000) sixth and seventh principles reads, "Linkages across levels are more likely to be exhibited for proximal, included, embedded, and or directly coupled levels and entities" and "Linkages are more likely to be exhibited for constructs that tap content domains underlying meaningful interactions across levels" (p. 21). These first six principle

discussed address multilevel theory development involving emerging aspects of organizational phenomena.

The next three principles highlighted by Kozlowski and Klein's (2000), "…explore three ways in which time may be incorporated into a multilevel model, increasing the rigor, creativity, and effectiveness of multilevel theory building" (pp. 21-22). Over time phenomena multilevel relationships may indicate bidirectional or reciprocal characteristics (Kozlowski & Klein, 2000). Thus, it is essential that theorist explicitly state their assumptions about the influence of time on the phenomena of interest. Otherwise, organization life cycles may be misinterpreted by the theorist or researcher. Kozlowski and Klein's (2000) posit, "Thus time may serve as a boundary condition for the model…." (p. 22). Kozlowski and Klein's (2000) eight principle read,

> The temporal scope, as well as the point in the life cycle of a social entity, affect the apparent origin and direction of many phenomena in such a way that they may appear variously top-down, bottom-up, or both. Theory must explicitly specify it temporal reference points (p. 23).

The second time-orientated principle espoused by Kozlowski and Klein's (2000) was, "time-scale variations across levels" (p. 23). The authors posit, "Lower level phenomena tend to have more rapid dynamics than higher-level and emergent phenomena, which make it is [sic] easier to detect change in lower-level entities" (p. 23). Relative to time-orientated principles for individual-level phenomenon be realized at a collective level, it must combine through social and work interactions to transcend levels of an organization. Whereas top-down contextual initiatives could be realized immediately at lower-levels of a performance

system. Kozlowski and Klein's (2000) ninth principle read, "Time-scale differences allow top-down effect on lower level to manifest quickly. Bottom-up emergent effects manifest over longer periods. Research design must be sensitive to the temporal requirements of theory" (p. 23).

The third time-orientated principle espoused by Kozlowski and Klein's (2000) was, "entrainment: changing linkages over time" (p. 24). The term entrainment as defined by Kozlowski and Klein's (2000), "…refers to the rhythm, pacing, and synchronicity of processes that link different levels (Ancona & Chong, 1997; House et al., 1995)" (p. 24). During instances where work flow is not consistent over time the entrainment factor is loosely coupled between units within a performance system. Kozlowski and Klein's (2000) noted, "…the degree of interdependence or coupling can vary significantly depending on the timing of events or acts that require a synchronous and coordinated response" (p. 24). Kozlowski and Klein's (2000) tenth principle read, "Entrainment can tightly couple phenomena that ordinarily are only loosely coupled across levels. Theories that address entrained phenomena must specify appropriate time cycles and must employ those cycles to structure research designs" (p. 25).

The final principle for guiding MLTB process as described by Kozlowski and Klein's (2000) was, "argument by logical analysis and persuasion" (p. 25). The authors rationale for making explicit logical analysis and persuasion is centered in the fact the multilevel theory building is multidiscipline in nature. Thus, organizational research communities may not draw the identical assumption which may be academic paradigm dependent. Kozlowski and Klein's (2000) posited, "…unstated assumptions in a multilevel theory may be obvious to the

members of one sub-discipline but not to the members of another, who are also interested in the new multilevel theory" (p. 25). The question of "why not?" is an interesting and essential principle of MLTB processes. Kozlowski and Klein's (2000) avered, "In exploring why not, theorists may refine their models, incorporating important insights and nuances. This adds diversity and depth to theory…." (p. 26). Kozlowski and Klein's (2000) eleventh principle read, "Multilevel theoretical models must provide a detailed explanation of the assumptions undergirding the model. Such explanations should answer not only the question of why but also the question of why not" (p. 26).

Specification principles

The next four guidelines for MLTB presented by Kozlowski and Klein (2000) delineate specification processes within the model. Although full operationalization and testing of a multilevel theory of scenario planning is beyond the scope of this study, of the three studies used to develop the methodology for building multilevel theory, Kozlowski and Klein's work provided the most explicit information on model specification. As a result, this study sought to provide the most comprehensive examination of MLTB. The following sections will explore the principles of specification in order to develop a more comprehensive methodology for building a multilevel theory of scenario planning.

Multilevel research has experienced controversies and problems associated with misspecification or misalignments amongst theoretical levels of constructs, measurements associated with MLTB, as well as representations for analysis (Kozlowski and Klein, 2000). While misalignment can be a problematic for any research design, but mixed level design is vulnerable to misspecification at multiple levels (individual-level, dyads, organizations,

societies, etc.) for constructs and units alike. Data collection at one level may be inappropriately credited to analysis at the wrong level. For example, collecting data at an individual-level of measurement, but applying analysis to a group-level construct. Kozlowski and Klein (2000) argued, "Precise explication [of constructs] lays the foundation for sound measurement" preventing degrading of construct validity and create[ing] concerns about generalizability" (p. 26). Kozlowski and Klein (2000) put forth, "The level of a construct is the level at which it is hypothesized to be manifest in a given theoretical model—the known or predicted level of the phenomenon in question " (p. 27).

While the question of level may be unasked in some studies, but in MLTB it is essential that we ask what is the level of the functional construct(s) of interest? Kozlowski and Klein (2000) posited, "…we prefer to use the phrase *level of the construct* because mixed-level models, by definition, include constructs that span multiple levels; that is generalizations are constrained by the level of the endogenous construct ('the level of the theory')" (p. 27). Kozlowski and Klein's (2000) first principle of specification read, "The theorist should explicitly specify the level of each construct in a theoretical system" (p. 28). Closely related to the level of construct is the second specification principle, "When higher-level constructs are based on emergent processes, the level of origin, the level of the construct, and the nature of the emergent process must be explicitly specified by the theory" (Kozlowski & Klein, 2000, p. 28).

Since constructs can potentially manifest themselves at multiple levels, Kozlowski and Klein (2000) sought out to resolve controversies and confusion surrounding unit-level constructs. Their solution was to distinguish between three construct types: global unit

properties, shared unit properties, and configural unit properties. Kozlowski and Klein (2000) put forth, "Global units are single-level phenomena"…and "their properties originate and are manifest at the unit level" (p. 29). As opposed to shared and configural unit properties that originate at lower levels of a phenomena and manifest at higher levels of said phenomena (Kozlowski & Klein, 2000). It was also noted by Kozlowski and Klein (2000), "Shared and configural unit properties emerge from the characteristics, behaviors, or cognitions of unit members—and their interactions—to characterize the unit as a whole" (p. 29). Kozlowski and Klein's (2000) third principle of specification read, "Theorist whose models contain unit-level constructs should indicate explicitly whether their constructs are global unit properties, shared unit properties, or configural unit properties. The type of unit-level construct should drive its form of measurement and representation for analysis" (p. 32).

The next principle is centered in level of measurement of each construct. However, this study will not proceed through gathering data on the resulting theory, an exploration of issues of measurement will provide for a more thorough multilevel theory of scenario planning. This process will also be useful in future attempts to verify and validate the resulting theory. Kozlowski and Klein (2000) argued, "the level of measurement is the level at which data are collected to assess a given construct" (p. 32). Proceeding section defined and illustrated levels constructs, as well as emergent properties of constructs as possessing global, shared and configural properties. Kozlowski and Klein's (2000) fourth principle of specification read,

> There is no single best way to measure unit-level constructs. The type of a unit-level construct, in addition to its underlying theoretical model,

> determine how the construct should be assessed and operationalized. As a general rule, global properties should be assessed and represented at the unit level. Shared and configural properties should be assessed at the level or origin, with the form of emergence reflected in the model of data aggregation, combination, and representation (p. 35).

The next principle put forth by Kozlowski and Klein (2000) is focused on establishing the construct validity of shared properties. Both within-group and between-group variance is critical to the research design, measurement and analysis to prevent misspecification. Kozlowski and Klein (2000) noted, "There are two primary issues relevant to testing models with one or more shared unit properties:

- Establishing the measurement model; and
- Evaluating the substantive theoretical model" (p. 35).

However, Kozlowski and Klein (2000) posited, "…the particular approach [measuring group variances] chosen is a matter of consistency with one's theory and data" (p. 36). Kozlowski and Klein's (2000) first of six principles of empirical research read,

> The assumption of isomorphism of shared unit properties should be explicitly evaluated to establish the construct validity of the aggregated measure. The selection of a consensus- or consistency-based approach should be dictated by theory and data; no approach is universally preferable (p. 36).

In the next principle for multilevel theory specification the authors address data sources, constructs, and measurement levels. Individuals may serve as sources of

information, but this fact does not make them the construct. It is important to note informants provide data, but would not serve as the level of measurement. This principle is explained by Kozlowski and Klein's (2000) second principle of empirical research that read,

> Individuals may serve as expert informants for higher-level constructs when they can directly observe or have unique knowledge of the properties in question. As a general rule, expert informants are most appropriate for the measurement of global unit-level properties and observable (manifest) configural properties. They are least appropriate for the measurement of shared properties and unobservable (latent) configural properties (p. 37).

This principle is explained by Kozlowski and Klein's (2000) third principle of empirical research that read,

> In the evaluation of unit-level or mixed unit-level and individual-level theoretical models, the sampling strategy must allow for between-unit variability at all relevant levels in the world. Appropriate sampling design is essential to an adequate test of such models (p. 47).

This principle is explained by Kozlowski and Klein's (2000) fourth principle of empirical research that read, "Time-scale differences allow top-down cross-level effects to be meaningful examined with cross-sectional and short-term longitudinal designs. Bottom-up emergent effects necessitate long-term longitudinal or time-series designs" (p. 47). This principle is explained by Kozlowski and Klein's (2000) fifth principle of empirical research that read, "Entrainment tightly links phenomena that are ordinarily only loosely connected

across levels. Sampling designs for the evaluation of theories that propose entrained phenomena must be guided b theoretically specified time cycles, to capture entrainment and its absence" (p. 48). This principle is explained by Kozlowski and Klein's (2000) fifth principle of empirical research that read,

> There is no one, all-encompassing multilevel data-analytic strategy that is appropriate to all research questions. Particular techniques are based on different statistical and data-structure assumptions, are better suited to particular types of research questions, and have different strengths and weaknesses. Selection of an analytic strategy should be based on (a) consistency between the type of constructs, the sampling and data, and the research question; and (b) the assumption, strengths, and limitations of the analytic technique (p. 51).

The principles sixteen through twenty provided by Kozlowski and Klein (2000) related specifically to empirical research in multilevel research. With the focus of this study being on developing multilevel theory of scenario planning, these five principles provide insight for future research, but will not be incorporated into the final methodology of this study. Each principle is listed below in Table 13 and will prove useful in verification and validation processes reserved for future research. These principles will be address more fully in Chapter V of this study.

Table 13 Central Principles of Multilevel Theory Building and Empirical Research.			
Four Guideline Sets	Empiricist MLTB Principles	Kozlowski & Klein, 2000	Conceptual Principles Surrounding MLTB Principles.
Conceptual Development of MLTB	Designate endogeneous constructs	Principle 1	Theory building should begin with the designation and phenomenon and the endogeneous construct(s) of interest (Kozlowski & Klein, 2000, p. 13).
	Specify how phenomenon (single- or multilevel)	Principle 2	Multilevel theoretical models are relevant to the vast majority of organizational phenomena. Multilevel models may, however, be unnecessary if the central phenomena of interest (a) are uninfluenced by higher-level organizational units, (b) do not reflect the actions or cognitions of lower-level organizational units, and/or (c) have been little explored in the organizational literature. (Kozlowski & Klein, 2000, p. 14).
	Specify theory levels, units, or elements	Principle 3	Virtually all organizational phenomena are embedded in a higher-level context, which often has either direct or moderating effects on lower-level processes and outcomes. Relevant contextual features and effects from the higher level should be incorporated into theoretical models. (Kozlowski & Klein, 2000, p. 15).
	Specify emergent constructs	Principle 4	Many higher-level phenomena emerge from characteristics, cognition, behavior, affect, and interactions among individuals. Conceptualization of emergent phenomena at higher levels should specify, theoretically, the nature and form of these bottom-up emergent processes. (Kozlowski & Klein, 2000, p. 18).
	Unit specification (formal vs. informal)	Principle 5	Unit specification (formal versus informal) should be driven by the theory of the phenomena in question. Specification of informal entities that cut across formal boundaries, or that occur within formal units and lead to differentiation, requires careful consideration. (Kozlowski & Klein, 2000, p. 20).
	Specify across levels	Principle 6	Linkages across levels are more likely to be exhibited for proximal, included, embedded, and/or directed coupled levels and entities. (Kozlowski & Klein, 2000, p. 21)
	Specify linkages	Principle 7	Linkages are more likely to be exhibited for constructs that tap content domains underlying meaningful interactions across levels. (Kozlowski & Klein, 2000, p. 21).
	Specify temporal scope	Principle 8	The temporal scope, as well as the point in the life cycle of a social entity, affect the apparent origin and direction of many phenomena in such a way that they appear variously top-down, bottom-up, or both. They must explicitly specify its temporal reference points. (Kozlowski & Klein, 2000, p. 23).
	Specify time cycles	Principle 9	Time-scale allow top-down effects on lower levels to manifest quickly. Bottom-up emergent effects manifest over longer periods. Research designs must be sensitive to the temporal requirements of theory. (Kozlowski & Klein, 2000, p. 23).

Table 13 Continued.			
Four Guideline Set	Empiricist MLTB Principles	Kozlowski & Klein, 2000	Conceptual Principles Surrounding MLTB Principles.
	Specify entrainment characteristics	Principle 10	Entrainment can tightly couple phenomena that ordinarily are only loosely coupled across levels. Theories that address entrained phenomena must specify appropriate time cycles and must employ those cycles to structure research designs. (Kozlowski & Klein, 2000, p. 25).
	Explain assumptions: "why" and "why not" of the model	Principle 11	Multilevel theoretical models must provide a detailed explanation of the assumptions undergirding the model. Such explanations should answer not only the question of why but also the question of why not. (Kozlowski & Klein, 2000, p. 26).
	Analytic strategies	Principle 21	There is no one, all-encompassing multilevel data-analytic strategy that is appropriate to all research questions. Particular techniques are based on different statistical and data-structure assumptions are better suited to particular types of research questions, and have different strengths and weaknesses. Selection of an analytic strategy should be based on (a) consistency between the type of constructs, the sampling and data, and the research question; and (b) the assumption, strengths, and limitations of the analytic technique (Kozlowski & Klein, 2000, p. 51).
Specification and Operationalizatio for Empirical Researc	Specify level of constructs	Principle 12	The theorist should explicitly specify the level of each construct in a theoretical system. (Kozlowski & Klein, 2000, p. 28).
	Specify emergent processes	Principle 13	When higher-level constructs are based on emergent processes, the level of origin, the level o the construct, and the nature of the emergent process must be explicitly specified by the theory. (Kozlowski & Klein, 2000, p. 28).
	Specify the type of unit-level construct(s)	Principle 14	Theorists whose models contain unit-level constructs should indicate explicitly whether their constructs are global unit properties, shared unit properties, or configural unit properties. The type of unit-level constructs should drive its form of measurement and representational for analysis. (Kozlowski & Klein, 2000, p. 32).

Table 13 Continued.			
Four Guideline Set	Empiricist MLTB Principles	Kozlowski & Klein, 2000	Conceptual Principles Surrounding MLTB Principles.
	Analytic strategies	Principle 15	There is no single best way to measure unit-level constructs. The type of a unit-level construct, in addition to its underlying theoretical model, determine how the constructs should be assessed and operationalized. As a general rule, global properties should be assessed and represented at the unit level. Shared and configural properties should be assessed at the level of origin, with the form of emergence reflected in the model of data aggregation, combination, and representation. (Kozlowski & Klein, 2000, p. 35).
	Data collection/ Sampling	Principle 16	The assumption of isomorphism of shared unit properties should be explicitly evaluated to establish the construct validity of the aggregated measure. The selection of a consensus- or consistency-based approach should be dictated by theory and data; no approach is universally preferable. (Kozlowski & Klein, 2000, p. 36).
	Individuals as informants	Principle 17	Individuals may serve as expert informants for higher-level constructs when they can directly observe or have unique knowledge of the properties in question. As a general rule, expert informants are most appropriate for the measurement of global unit-level properties and observable (manifest) configural properties. They are least appropriate for the measurement of shared properties and unobservable (latent) configural properties. (Kozlowski & Klein, 2000, p. 37).
	Sampling within and across units	Principle 18	In the evaluation of unit-level or mixed unit-level and individual-level theoretical models, the sampling strategy must allow for between-unit variability at all relevant levels in the world. Appropriate sampling design is essential to an adequate test of such models. (Kozlowski & Klein, 2000, p. 47).
	Sample across time	Principle 19	Time-scale differences allow top-down cross-level effects to be meaningful examined with cross-sectional and short-term longitudinal designs. Bottom-up emergent effects necessitate long-term longitudinal or time-series designs. (Kozlowski & Klein, 2000, p. 47).

Table 13 Continued.			
Four Guideline Set	Empiricist MLTB Principles	Kozlowski & Klein, 2000	Conceptual Principles Surrounding MLTB Principles.
	Time cycles and entrainment	Principle 20	Entrainment tightly links phenomena that are ordinarily only loosely connected across levels. Sampling designs for the evaluation of theories that propose entrained phenomena must be guided b theoretically specified time cycles, to capture entrainment and its absence. (Kozlowski & Klein, 2000, p. 48).

The principles introduced by Kozlowski and Klein (2000) represent a coherent framework to guide MLTB processes. Their work revealed that although MLTB may be new to the field of HRD, the focus on multilevel research has been around in organizational theory development literature since the 1990s (House et al., 1995). Kozlowski and Klein's detail of the MLTB process and their work has greatly influenced multilevel methodology and this study on scenario planning. The next study reviewed for developing this study's methodology is Morgeson and Hofmann (1999) and focuses primarily on the structure and function of "collective constructs".

Morgeson and Hofmann's Guidelines for Collective Construct Implications in MLTB

Burton-Jones and Gallivan (2007) found, "Many guidelines have been advanced for conducting multilevel research: 8 by Klein et al., (1994), 11 by Morgeson and Hofmann (1999), and 21 by Kozlowski and Klein (2000)" (p. 661). Burton-Jones and Gallivan drew on Morgeson and Hofmann's multilevel construct guidelines, "because unlike the other guidelines they focus directly on the nature of multilevel constructs" (p. 661) in developing a multilevel perspective of information systems. But what is the fundamental nature of

collective constructs and their implications for multilevel theory development? Morgeson and Hofmann (1999) questioned, "…Is it justifiable to refer to collectives as if they possess characteristics that are inherently human" (p. 249)? Addressing the nature of collective constructs is critical to multilevel research in order to differentiate and integrate variables across multiple levels of analysis (Morgeson & Hofmann, 1999). In Morgeson and Hofmann's (1999) general model for developing multilevel theory they define collective as, "…any interdependent and goal-directed combination of individuals, groups, departments, organizations, or institutions" (p. 251). To understand how structure emerges at collective levels, Morgeson and Hofmann focused on components of collective action. Morgeson and Hofmann (1999), "…focus[ed] on the systems of interaction among organizational members and collectives" (p. 251).

Morgeson and Hofmann (1999) subscribed to the notion that, "…individual action is limited by the surrounding context, and, thus, the admissible range of actions is influenced by a multitude of situational or contextual factors" (p. 251). The authors further posited, "These actions and the context within which they occur generally can be referred to as the ongoings of the individual system" (p. 251). By extension, collectives would have their individual-person systems interactive with one another. Morgeson and Hofmann (1999) argued, "…collectives are open interaction systems, where actions and reactions determine the structure of the system" (p. 252). Morgeson and Hofmann put forth, "This patterning of action is a type of collective structure and forms the basis for the emergence of the collective construct we might call 'organizational memory'" (p. 252). For Morgeson and Hofmann, theorist can identify and describe collective constructs,

> …the structure of any given collective (e.g., a work team) can be viewed as a series of ongoings, events, and event cycles between the component parts…the collective action (which is composed of ongoings and events) enable collective phenomena to emerge. Labels then can be affixed to this phenomenon, resulting in what could be termed the emergence of a collective construct. Absent this action, the construct simply does not exist (p. 252).

The intersection of collective constructs as theoretical units coupled with levels issues relationships or linkages within and between organizations as subperformance systems may provide information about MLTB in scenario planning as this studies phenomenon of interest.

Having established a working definition of collective constructs, Morgeson and Hofmann (1999) stated that their purpose was, "Focusing on a construct's function allows scholars to create a level-free metric with which to link similar constructs across levels" (p. 255). For Morgeson and Hofmann, focusing on structure and function was a functionalist perspective of viewing multilevel inquiry in organizational studies. They found it to be, "a useful mechanism for discussing collective phenomena and integrating constructs across levels, thereby facilitating the development of multilevel theories" (p. 256). Structure and function meaning making according to Morgeson and Hofmann (1999) was defined as, "…structure of collective constructs is composed of the actions and interactions of organizational members…therefore, the structure of collective phenomena is really the structuring of events. Absent ongoings and events, social structure does not exist" (p. 256).

Thus, it is not simply the presence of a construct that gives it meaning, a construct only acquires meaning through the interaction of the structure of social ongoings and events.

Morgeson and Hofmann (1999) argued, "As a result, interaction allows collective constructs to emerge and to be sustained, and it is this interaction that exerts an influence on organizational members" (256). Implicit in Morgeson and Hofmann's model is that organizational setting provided the context for interactions for its membership. Therefore, multilevel theory building development and testing should be sensitive to the limits, delimits or organizational context or systems of interaction. The nature of an organization (bureaucratic, entrepreneurial, etc.) will influence the systems of interaction and mediate different sensemaking context for organizational membership. Morgeson and Hofmann put forth, "…a functional analysis provides the scholar with a language and useful heuristic for theory development" (p. 259). While functional analysis allows integration across levels, Morgeson and Hofmann cautioned it ignores differences in collective construct structures. In other words, different structures could produce identical functions. Attention to either function or structure alone will minimize the other lens of collective construct analysis.

Morgeson and Hofmann (1999) averred, "…it is entirely possible to measure relevant collective phenomena at the individual level and still address theoretical questions at the collective level. This involves clearly distinguishing between the level of theory and the level of measurement (Klein et al., 1994; Rousseau, 1985; Schneider, 1990)" (p. 261). The level of a theory defines the target that the research is interested in understanding. Morgeson and Hofmann stated, "As such, it concerns the level at which constructs and theoretical relations are hypothesized to exist and the level to which inferences are to be drawn" (p. 261). The

authors further, "suggest that the choice of level of measurement should be guided by one's theoretical model, the nature of the construct under investigation, the question one is trying to investigate, and whether one is concerned with assessing structure" (p. 261). In summary, Morgeson and Hofmann (1999) argued, "Structures emerge from interaction and can, over time, come to influence systems of interaction. Functions represent the causal outputs of constructs and provide a mechanism for integrating constructs across levels" (p. 262). Their work concluded by providing eleven guidelines for issues to be considered in multilevel theory building or testing. The collective guidelines provide some limited information on the operationalization of multilevel theory. Each of the collective construct guidelines are summarized below in Table 14 titled, Guidelines for Studying Collective Multilevel Theory Building Constructs.

In concluding their article, Morgeson and Hofmann (1999) stated,

> …in any given measure of a construct, researchers must decide on an approach orientated around either function or structure. This does not preclude measuring the same construct in two different ways, but it does mean that any particular measure will be orientated in a specific way (p. 262).

Morgeson and Hofmann (1999) posited, "It may be the case during early development of a theory that only a small number of the underlying mechanisms are discussed. As the theory matures, however, investigations aimed at uncovering these other processes should take place" (p. 259). The authors advised, "The joint consideration of structure and function is perhaps most useful when developing multilevel theory" (p. 259). They also pointed out that the examination of structure and function, "should be done only to

the extent that it is useful and helps solve some of the problems that arise when developing and testing multilevel theories" (p. 262). Accordingly, the guidelines presented by Morgeson and Hofmann are integrated into the methodology used in this study to develop multilevel theory of scenario planning.

Table 14 Guidelines for Studying Collective Multilevel Theory Building Constructs.

Two Guideline Sets	Structural Implications	Morgeson & Hofmann, 1999	Conceptual Issues Surrounding Structure in MLTB and Testing
Understanding Multilevel Constructs	Interaction	Guideline 1	The investigation of constructs at the collective level could begin with an understanding of the interaction of organizational members. Because these interactions allow collective constructs to emerge and be maintained, focusing on the interactions that define and reinforce the collective phenomena can provide a better understanding of how collective phenomena arise and continue, particularly in the face of contextual or membership changes. Such understanding is facilitated by explicitly identifying systems of ongoings and events, particularly those events that lend structure to collective phenomena. (Morgeson & Hofmann, 1999, p. 257)
	Emergence	Guideline 2	Because the emergence of some constructs is conditional a of others is inevitable, accounts of collective constructs should provide details about their developmental aspects a should specify the processes through which the constructs emerge, particularly in terms of the importance of critical events as compared to usual ongoings. (Morgeson & Hofmann, 1999, p. 257)
	Limitations	Guideline 3	In explicating the structure of a collective construct, one should acknowledge and understand the context within wh individuals operate. Because context limits the range of potential interaction, it may have a particular influential ro in determining the emergence of a construct and its structu (Morgeson & Hofmann, 1999, p. 258)
	Functional Implications		Conceptual Issues Surrounding Function in MLTB and Testing
	Integration	Guideline 4	"Explicit consideration of a construct's function may allov scholars to integrate functionally similar (but structurally dissimilar) constructs into broader nomological networks constructs. This can serve as an integrative mechanism in multilevel research and theory" (Morgeson & Hofmann, 1999, p. 258).

Table 14 Continued.			
Two Guideline Sets	Structural Implications	Morgeson & Hofmann, 1999	Conceptual Issues Surrounding Structure in MLTB and Testing
	Persistence	Guideline 5	To understand the structure of a collective construct, it m be helpful to identify the role the outcome plays in the collective, particularly in terms of how it facilitates goal accomplishment. This can help provide insights into why construct exists and why it persists (or fails to persist) ov time. (Morgeson & Hofmann, 1999, p. 259)
	Structure and Function Integration		Conceptual Issues Surrounding Structure & Function in MLTB and Testing
Guidelines for Application of Constructs	Identify structure at each level	Guideline 6	Scholars could begin multilevel theory development with a functional analysis, examining the output of a given construct. This would identify commonalities across levels that could be used to provide insight into the construct's structure at a particular level. That is, identifying the function naturally will lead into a discussion of the processes or structures that underlie the function. The theorist then could articulate the structure o the constructs at each hierarchical level. (Morgeson & Hofmann, 1999, p. 259)
	Identify function structures	Guideline 7	Because a number of different structures can result in the same function, it is incumbent upon the researcher to specify the particular structure of a construct at a given level. As an area of research matures, identification and acknowledgement of the different structures or process that account for the function should become a high priority (Morgeson & Hofmann, 1999, p. 260)
	Divergence	Guideline 8	Because similar structures can result in different functions, it is important for scholars to understand the factors that influence divergence in outcomes. Identification of the contextual factors or structural properties that regulate this divergence is important for a adequate understanding of the phenomena. (Morgeson & Hofmann, 1999, p. 260)

This section of Chapter III described in detail Morgeson and Hofmann's guidelines for collective MLTB constructs and their theory building implications. The next consideration for this study is to integrating Kozlowski and Klein's (2000) MLTB principles and Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs into Dubin's (1969/1978) theory-research cycle.

Developing an Integrated Methodological Model

Dubin's (1969/1978) seminal theory building model is silent on its interpretive framework from the functionalist paradigm which consisted of a post-positivist epistemology. Therefore, this study is addressing this research design consideration as a theory building improvement. Denzin and Lincoln (2008) argued, "The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm* or interpretive framework…." (p. 19). Thus, theorist-researchers need to make explicit their interpretive framework or paradigm as a prerequisite to entering Dubin's (1969/1978) theory-research cycle. Just as Dubin (1969/1978) sought to make a theory building contribution by considering interactions between theory research with empirical research to create a comprehensive theory building model for applied disciplines, this study embraces Dubin's theory building model, as well as highlights Denzin and Lincoln's point that theory building begins prior to entering the theory-research cycle when the researcher defines the research project interpretive framework or paradigm.

When a philosophical hermeneutic philosophy informs the theorist-researchers entry into Dubin's (1969/1978) theory-then-research cycle, it creates a space to construct a theoretical model equipped to operationalize interpretive outcomes at two of the theory building model components: theoretical research and empirical research. Polkinghorne (1983) described combining differences as syncretism which is more than just synthesis, "Syncretism denotes the uniting or combining of differences, a meaning which synthesis does not carry" (p. 254). Polkinghorne argued, "By combining and integrating the knowledge gained through the various [inquiry] systems, an understanding of a topic becomes available

which is deeper than the understanding gained from any one system or from merely placing information side by side" (p. 255). By juxtaposing and combining two different inquiry systems (Dubin's (1969/1978) functionalist paradigm consisting of a post-positivist epistemology with a functionalist paradigm consisting of a philosophical hermeneutical epistemology] within the same study and operationalizing the study with cognitive mapping research a richer understanding of SP phenomenon will be realized. SP as the phenomenon of interest occurs within an organization context (focal point of analysis). Therefore, retaining Dubin's functionalist paradigm equips a theorist-researcher to attend to MLTB considerations such as structural and function of social subperformance systems (organizations) operating in a larger social performance system (society). It is the philosophical hermeneutic philosophy linked to theoretical research and empirical research that retools Dubin's theory building model beyond post-positivist traditions.

Briefly outlining the features of Dubin's (1969/1978) theory-research cycle, the cycle consisted of two components: theoretical research meaning theory building and empirical research meaning theory testing. Dubin believed a theoretical model started with things or variables (units). The model then specified how the units interacted with one another (laws of interaction). Next the limits within which the model was expected to hold were defined (boundaries). Lastly, the theoretical model defined the systems states representing how units interacted differently with one another (system states). That is the system states in which the theoretical model was operative. Units, laws of interaction, boundaries and system states represented the basic features of the theoretical research model.

With the theoretical research model defined, the theorist-researcher was ready to enter the research-side of Dubin's theory-research cycle and draw conclusions about the model (propositions). When a decision to confirm the theoretical research represented the real world is made, propositions needed to be converted into testable terms (empirical indicators). The next operational research step was to substitute empirical indicators into propositional statements generating testable (hypothesis). This post-positivist (physical sciences) model presupposes a stable, unchanging reality and as such may be studied using empirical methods of objective social science (Denzin & Lincoln, 2008).

In general, Dubin's two component theory building model has been critiqued by HRD scholars (Lynham, 2002b; Holton & Lowe, 2007; Storberg-Walker, 2003; Swanson, 2007) and found to be of limited utility outside of the post-positivistic paradigm. More specifically, Morgeson and Hofmann (1999) put forth criteria for informing a theorist-researcher's data-analytic strategy asserting, "Selection of an analytic strategy should be based on (a) consistency between the type of constructs, the sampling and data, and the research question; and (b) the assumption, strengths, and limitations of the analytic technique" (p. 51). Informed by Morgeson and Hofmann's data-analytic strategy criteria, this studies theoretical research must account for collective MLTB constructs and empirical research in order to attend to operationalization of the resultant model. Specifically, step 2 of Dubin's theory research which addresses laws of interaction between units of a theory will need to be expanded to include MLTB principles and guidelines for collective MLTB constructs. Secondly, a revision to the empirical research model is needed that includes inserting cognitive mapping research as the primary research technique to account for interpretive outcomes while

augmented by quantitative research technique which will account for functionalist MLTB principles and collective MLTB constructs.

While Dubin's (1969/1978) post-positivist, single-level theoretical research component of the theory-research cycle only moderately incorporated levels research into his model, it was selected for this study as the scientific model for revision into a MLTB model. The logic for this selection was informed, in part, by Dubin when he posited, "Coming from theory to research, attention is focused on truth, the nature of reality, the processes of knowing, and the logic of meaning statements" (p. 17). Dubin's theory building model is thought to be a good fit for this study, because of the theory-then-research focus on truth and the nature of reality which is akin to the focus of SP phenomenon. Dubin's empirical research component is also considered valuable, while quantitative-empirical research is being considered secondary to an interpretive data collection and analysis strategy which is needed to operationalize a SP theory with interpretive outcomes. Quantitative research is not being rejected in this study; it is just not considered the primary research method to operationalize an interpretive form of scholarly inquiry. It should be noted, inferential statistics and mathematical analysis are considered invaluable to this study when associated with cause-effect relationships but will be considered secondary to interpretive data collection techniques centered in data collected directly from SP participants.

The proposed scientific model revisions address dynamic interaction between theoretical research and empirical research of the model resulting in a theory building model capable of attending to MLTB characteristics producing interpretive outcomes. The rationale for refining Dubin's (1969/1978) theory building model from the behavioral sciences with

MLTB principles for this studies resulted from Kozlowski and Klein's (2000) observation in the organizational sciences that stated, "No single source exists to cut across these [theory building] differences and to guide the interested researcher in the application of multilevel concepts. This contributes to confusion and limits the development of multilevel theories" (p. 4). Although Kozlowski and Klein's principles of MLTB and empirical research were intended to cut across those differences, MLTB principles themselves are not sufficient and adequate to constitute a theory. Integrating MLTB principles along with Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs into extant theory building model previously utilized to generate single-level theory results in an improved approach to MLTB.

MLTB elements will be incorporated into both of Dubin's (1969/1978) theory building components: theoretical research and empirical research. In addition to revising Dubin's post-positivistic, single-level theory building model to accommodate multilevel theory building, the resultant theory building model will need to move away from Dubin's original analytic technique of quantitative-empirical research. The logic for moving away from quantitative-empirical research is centered in the fact that this analytical strategy contributes to a theory of objective knowledge, while the phenomena of interest for this study is centered in a theory of understanding. Therefore, a MLTB research design is advanced capable of accommodating interpretive outcomes in order to contribute to a theory of understanding. Generating knowledge that contributes to a theory of understanding is considered essential for scholarly inquiry into SP as the phenomena of interest. Integration of Dubin's (1969/1978) single-level theory building model, with Kozlowski and Klein (2000)

MLTB principles, and Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs are highlighted in Table 15 result in a functionalist MLTB model.

Table 15 Integrating Kozlowski and Klein's (2000) Principles for MLTB and Morgeson and Hofmann's (1999) Guidelines for Collective MLTB Constructs into Dubin's (1969, 1978) Theoretic Research and Empirical Research Theory Building Components.	
Theoretical paradigm [Linking philosophy wi research: Theoretical an empirical.]	"The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm* or interpretive framework, a "basic set of beliefs that guides action" (Denzin & Lincoln, 2008, p. 19).
Conceptual Technique	Theoretical Research side of the Theory-Research Cycle (Dubin, 1969/1978).
Theoretical Research Meaning Theory Building (Dubin, 1969, p. 223). [Linking theoretical research with empirical research.]	S1. Units of a theory. Types of units: Enumerative units, associative units, relational units, statistical units, summative unit, complex units (Dubin, 1969/1978). P1. Theory building should begin with the designation and definition of the endogeneous construct(s) of interest (Kozlowski & Klein's, 2000, p. 13). P2. Multilevel theoretical models are relevant to the vast majority of organizational phenomena. Multilevel models may, however, be unnecessary if the central phenomena of interest (a) are uninfluenced by higher-level organizational units, (b) do not reflect the actions or cognitions of lower-level organizational units, and/or (c) have been little explored in the organizational literature. (Kozlowski & Klein's, 2000, p. 14). P3. Relevant contextual features and effects from the higher level should be incorporated into theoretical models. (Kozlowski & Klein's, 2000, p. 15). P4. Conceptualization of emergent phenomena at higher levels should specify, theoretically, the nature and form of these bottom-up emergent processes. (Kozlowski & Klein's, 2000, p. 18). P5. Specification of informal entities that cut across formal boundaries, or that occur within formal units and lead to differentiation, requires careful consideration. (Kozlowski & Klein's, 2000, p. 20). P8. The temporal scope, as well as the point in the life cycle of a social entity, affect the apparent origin and direction of many phenomena in such a way that they appear variously top-down, bottom-up, or both. They must explicitly specify its temporal reference points. (Kozlowski & Klein's, 2000, p. 23). P9. Time-scale allow top-down effects on lower levels to manifest quickly. Bottom-up emergent effects manifest over longer periods. Research designs must be sensitive to the temporal requirements of theory. (Kozlowski & Klein's, 2000, p. 23). P10. Entrainment can tightly couple phenomena that ordinarily are only loosely coupled across levels. Theories that address entrained phenomena must specify appropriate time cycles and must employ those cycles to structure research designs. (Kozlowski & Klein's, 2000, p. 25). P11. Multilevel theoretical models must provide a detailed explanation of the assumptions undergirding the model. Such explanations should answer not only the question of why but also the question of why not. (Kozlowski & Klein's, 2000, p. 26). P12. The theorist should explicitly specify the level of each construct in a theoretical system. (Kozlowski & Klein's, 2000, p. 28). P13. When higher-level constructs are based on emergent processes, the level of origin, the level of the construct, and the nature of the emergent process must be explicitly specified by the theory. (Kozlowski & Klein's, 2000, p. 28).

Table 15 Continued.	
Theoretical paradigm [Linking philosophy wi research: Theoretical an empirical.]	"The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm* or interpretive framework, a "basic set of beliefs that guides action" (Denzin & Lincoln, 2008, p. 19).
Theoretical Research Meaning Theory Building (Dubin, 1969, p. 223). [Linking theoretical research with empirical research.]	P14. Theorists whose models contain unit-level constructs should indicate explicitly whether their constructs are global unit properties, shared unit properties, or configural unit properties. The type of unit-level constructs should drive its form of measurement and representational for analysis. (Kozlowski & Klein's, 2000, p. 32). P15. There is no single best way to measure unit-level constructs. The type of a unit-level construct, in addition to its underlying theoretical model, determine how the constructs should be assessed and operationalized. As a general rule, global properties should be assessed and represented at the unit level. Shared and configural properties should be assessed at the level of origin, with the form of emergence reflected in the model of data aggregation, combination, and representation. (Kozlowski & Klein, 2000, p. 35). P16. The assumption of isomorphism of shared unit properties should be explicitly evaluated to establish the construct validity of the aggregated measure. The selection of a consensus- or consistency-based approach should be dictated by theory and data; no approach is universally preferable. (Kozlowski & Klein's, 2000, p. 36). G1. The investigation of constructs at the collective level could begin with an understanding of the interaction of organizational members (Morgeson & Hofmann, 1999, p. 257). G2. …Collective constructs should provide details about their developmental aspects and should specify the processes through which the constructs emerge, particularly in terms of the importance of critical events as compared to usual ongoings. (Morgeson & Hofmann, 1999, p. 257). G3. In explicating the structure of a collective construct, one should acknowledge and understand the context within which individuals operate. (Morgeson & Hofmann, 1999, p. 258). G4. "Explicit consideration of a construct's function may allow scholars to integrate functionally similar (but structurally dissimilar) constructs into broader nomological networks of constructs. (Morgeson & Hofmann, 1999, p. 258). G5. To understand the structure of a collective construct, it may be helpful to identify the role the outcome plays in the collective, particularly in terms of how it facilitates goal accomplishment. This can help provide insights into why the construct exists and why it persists (or fails to persist) over time. (Morgeson & Hofmann, 1999, p. 259). G6. Scholars could begin multilevel theory development with a functional analysis, examining the output of a given construct. This would identify commonalities across levels that could be used to provide insight into the construct's structure at a particular level. That is, identifying the function naturally will lead into a discussion of the processes or structures that underlie the function. The theorist then could articulate the structure of the constructs at each hierarchical level. (Morgeson & Hofmann, 1999, p. 259). G7. Because a number of different structures can result in the same function, it is incumbent upon the researcher to specify the particular structure of a construct at a given level (Morgeson & Hofmann, 1999, p. 260). G8. Because similar structures can result in different functions, it is important for scholars to understand the factors that influence divergence in outcomes. Identification of the contextual factors or structural properties that regulate this divergence is important for an adequate understanding of the phenomena. (Morgeson & Hofmann, 1999, p. 260).
	S2. Laws of interaction (Linkages among units). P6. Linkages across levels are more likely to be exhibited for proximal, included, embedded, and/or directed coupled levels and entities. (Kozlowski & Klein, 2000, p. 21). P7. Linkages are more likely to be exhibited for constructs that tap content domains underlying meaningful interactions across levels. (Kozlowski & Klein, 2000, p. 21).
	S3. Boundaries. "A theoretical model is said to be bounded when the limiting values on the units comprising the model are known" (Dubin, 1969/1978, p. 127).

Table 15 Continued.	
Theoretical paradigm [Linking philosophy wi research: Theoretical an empirical.]	"The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm* or interpretive framework, a "basic set of beliefs that guides action" (Denzin & Lincoln, 2008, p. 19).
	S4. System states. The three criteria of system states -- *inclusiveness* of consequence for values of all units of the system, that the values are all *determinant* values, and the *persistence* of the state over some relevant time period—together describe the conditions that must be met to deal with system states. (Dubin, 1969/1978, p. 154).
Analytic Technique	Empirical Research side of the Theory-Research Cycle (Dubin, 1969/1978).
Emprical Research meaning Theory Testing (Dubin, 1969, p. 223). [Linking empirical research to theoretical paradigm and theoretical research.]	S5. Propositions. A proposition, then, is a truth statement about a model that is fully specified in its units, laws of interaction, boundary, and system states. (Dubin, 1969/1978, p. 166).
	S6. Empirical indicators of key terms. "An empirical indicator is an operation employed by a researcher to secure measurements of values on a unit. (Dubin, 1969/1978, p. 184).
	S7. Hypotheses. "An hypothesis may be defined as the predictions about values of units of a theory in which empirical indicators are employed for the named units in each proposition" (Dubin, 1969/1978, p. 212). "Every hypothesis is homologous with the proposition for which it stands" (p. 213). "The general form of a hypothesis is a conditional prediction about the relationship between two or more things, followed by a figurative question mark" (Dubin, 1969/1978, p. 16).
	S8. Testing. "A test of each such proposition will prove the most adequate test of the theory as a whole in the most economical fashion possible" (Dubin, 1969/1978, p. 217). Empirical test are classified into three categories: Extensive, intensive test, and inductive test. (Dubin, 1969/1978). P17. Individuals may serve as expert informants for higher-level constructs when they can directly observe or have unique knowledge of the properties in question. As a general rule, expert informants are most appropriate for the measurement of global unit-level properties and observable (manifest) configural properties. They are least appropriate for the measurement of shared properties and unobservable (latent) configural properties. (Kozlowski & Klein, 2000, p. 37). P18. In the evaluation of unit-level or mixed unit-level and individual-level theoretical models, the sampling strategy must allow for between-unit variability at all relevant levels in the world. Appropriate sampling design is essential to an adequate test of such models. (Kozlowski & Klein, 2000, p. 47). P19. Time-scale differences allow top-down cross-level effects to be meaningful examined with cross-sectional and short-term longitudinal designs. Bottom-up emergent effects necessitate long-term longitudinal or time-series designs. (Kozlowski & Klein, 2000, p. 47). P20. Entrainment tightly links phenomena that are ordinarily only loosely connected across levels. Sampling designs for the evaluation of theories that propose entrained phenomena must be guided b theoretically specified time cycles, to capture entrainment and its absence. (Kozlowski & Klein, 2000, p. 48). P21. There is no one, all-encompassing multilevel data-analytic strategy that is appropriate to all research questions. Particular techniques are based on different statistical and data-structure assumptions, are better suited to particular types of research questions, and have different strengths and weaknesses. Selection of an analytic strategy should be based on (a) consistency between the type of constructs, the sampling and data, and the research question; and (b) the assumption, strengths, and limitations of the analytic technique. (Kozlowski & Klein, 2000, p. 51). G9. There is a host of potentially important factors at the collective level, such as interaction, integration, coordination, and interdependence. In their theories and operationalizations, scholars must take these factors into account in order to fully understand the nature of such collective constructs. (Morgeson & Hofmann, 1999, pp. 260-261).

Table 15 Continued.	
Theoretical paradigm [Linking philosophy wi research: Theoretical an empirical.]	"The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm* or interpretive framework, a "basic set of beliefs that guides action" (Denzin & Lincoln, 2008, p. 19).
	G10. When operationalizing collective constructs, researchers may justifiably collect individual-level data. To collect data that are meaningful at the collective level, however, one must have a conceptual rationale for the level of measurement chosen. Inferences at the collective level will be facilitated by focusing on collective phenomena, framing questions in collective terms, treating individuals as informants about collective processes, and focusing on the role of individuals in terms of the wider collective. (Morgeson & Hofmann, 1999, p. 261). G11. "Researchers should be clear in how they operationalized their constructs with respect to whether they wish to assess the constructs' structure or function. Failure to do so may result in inadequate construct operationalization" (Morgeson & Hofmann, 1999, p. 262).

The resulting, improved theory building model will be used later in this study to build a multilevel theory of scenario planning. However, to operationalize interpretive aspects of SP in the proposed theory building model a point of departure from Dubin's quantitative-empirical research is merited. Cognitive mapping research represents with fidelity practices by SP participants and is consistent with the theoretical paradigm where philosophical hermeneutics informs the theory building philosophy of this study. Therefore, the next section of this chapter will consider cognitive mapping research as the primary method to operationalize interpretive outcomes of SP phenomenon.

Refinement

In reviewing the scholarly contributions of Dubin's (1968/1978) post-positivist, single-level theory building model from the functionalist paradigm, Kozlowski and Klein's (2000) MLTB principles, and Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs; Dubin's work provided important insights into theoretical research and empirical research components of theory building whereas Kozlowski and Klein and

Morgeson and Hofmann provided insights into MLTB principles and guidelines for collective MLTB constructs, respectively. There was clear opportunity for refinement and improvement of the MLTB process by systematically analyzing, critiquing and integrating the strengths of MLTB principles and guidelines for collective MLTB constructs into Dubin's extant theory building model. The reason for refining the theory building methods described in the three studies resulted, in part, from Kozlowski and Klein's assertion that, "no single source exists to cut across [the theoretical framework] differences and to guide the interested researcher in the application of multilevel concepts" (p. 4). Although Kozlowski and Klein's MLTB principles were mean to cut across those differences, MLTB principles do not in themselves make a theory building model. Likewise, Morgeson and Hofmann's guidelines for collective MLTB constructs need to be incorporated into extant theory building model. Framing levels issues into a theoretical model is considered a method improvement making it possible to represent, analyze and compare levels issues during theory building. With a revised MLTB model defined, it is necessary to discuss how interpretive outcomes of SP might be achieved.

In an effort to provide clarification, the following comparative critique of work and example of the relevant integration of the work by Dubin (1968/1978), Kozlowski and Klein (2000), Morgeson and Hofmann (1999) are provided. Dubin's theoretical model originates from the functionalist paradigm and consisted of a post-positivist theory building philosophy with two theory building components: theoretical research and empirical research. According to Dubin, these two components represented a comprehensive hypothetical-deductive theory building model using quantitative-empirical research to operationalize the model. However,

the model only marginally attended to MLTB processes. Therefore, Kozlowski and Klein's MLTB principles can be incorporated into Dubin's original theory building model to account for multilevel unit types and their emergent processes.

Morgeson and Hofmann's work specified guidelines for collective MLTB constructs and their function in theory building. While viewed as an essential contribution to MLTB neither Morgeson and Hofmann's nor Kozlowski and Klein's work met necessary and sufficient theory building criteria and are therefore not a theory. Yet, each of these scholarly works represented realist ontology, post-positivist epistemology, and an empirical-quantitative research method contributing to objective knowledge generation. Burton-Jones and Gallivan (2007) reported, "… all of the seminal multilevel papers (Chan 1998; Klein et al., 1994; Kozlowski and Klein, 2000; Morgeson & Hofmann, 1999; Rousseau, 1985) use terminology such as variables, nomology, construct validity, and true score" (p. 659). Rousseau, (1985) argued for characterization of emergent processes in this manner, "Functionalism-reductionism approach to hierarchy allows specification of relative levels (e.g., whether the level studied is higher or lower than other levels for which data are available)" (p. 26). Yet the widely accepted deductive-nomological theory building model of scientific explanation is inspired by part-whole reductionism. Silberstein and McGeever (1999) argued against reductionism and for theory building anchored in general systems theory, "Indeed, the very idea that the stuff at the bottom (whether it be fundamental laws or fundamental entities) provides the ultimate explanation for all phenomena is simply an expression of this kind of reductionism" (p. 183). Accounting for emergent theory building

processes is a marked improvement over Dubin's (1969/1978) single-level theory building processes.

Scientific model improvements, in this study, are realized by defining philosophical hermeneutic philosophy as the theory building philosophy informing the theorist-researchers entry into Dubin's (1969/1978) theory-research cycle creating a space to facilitate construction of a theory building model capable of producing expansive, systems thinking. Secondly, interpretive outcomes are made plausible by injecting SP conceptual theoretical units into the theoretical research component of this study. Thirdly, cognitive mapping research serves as the primary, first person data collection and analysis research technique to operationalize interpretive outcomes during empirical research. Interpretive outcomes will be realized when multiple plausible futures are sought through scenario development processes resulting in hypotheses to be tested in the real world. By integrating Kozlowski and Klein's (2000) Principles for MLTB and Morgeson and Hofmann's (1999) Guidelines for Collective MLTB Constructs into Dubin's (1969/1978) theory building model into one study a new and improved MLTB approach is defined, the intention is to enhance theory building and, specifically, the MLTB process for this study and future research.

Research Questions

Since MLTB is a theory building method in its own rights, as set of traditional research questions will not provide the same guidance as those questions might provide in other research arenas. Therefore, the methodology developed in this study serves as the guiding research process for the study. The following MLTB process description for SP provides details about the proposed improved methodology.

Research Process

While the multilevel approach to theory building is considered complex and challenging, it provides for the deconstruction and analysis of systems components (i.e. organization structure and function as a subperformance system operating in a larger social performance system context) without compromising emergent processes within the phenomenon of interest under investigation. In other words, MLTB process can move researchers beyond single-levels of phenomenon analysis to "multilevel theories integrate micro- and macro-organizational perspectives" (Klein & Kozlowski, 2000, p. xv). An equally important research outcome needed for this study is to understand and predict where possible nonobjective, interpretive knowledge characteristics SP as the phenomena of interest. Process and content aspects of the improved theory building process developed in this study are represented in Table 16 in three component parts. Component parts for theory development include: (a) interpretive framework or theoretical paradigm, (b) theoretical research meaning theory building, and (c) empirical research meaning theory testing. Additionally, Kozlowski and Klein's (2000) MLTB principles and Morgeson and Hofmann's (1999) guidelines for collective MLTB constructs were integration into Dubin's (1969/1978) post-positivistic, single-level theory building model; constructing a revised MLTB process capable of attending to interpretive theory building outcomes.

The proposed theory building model adheres to Denzin and Lincoln's (2008) strategy for inquiry, "A research design describes a flexible set of guidelines that connect theoretical paradigms first to strategies of inquiry and second to methods of collecting empirical material" (p. 22). The resulting methodology is represented pictorially in Table 16 in two

phases with phase one addressing the theory building model and phase two addressing levels components. Due to the nature of synthesizing two unique MLTB works into Dubin's (1969/1978) theory building model, terminology used in the new MLTB model mirrors Dubin's theoretical research and empirical research components of theory building. Table 16 attempts to provide a simplified visual representation of the newly developed MLTB methodology developed in this study. A more detailed explanation of the newly developed methodology and interaction with SP follows in the next section. Although the end results of this study is intended to be a multilevel theory of SP, the MLTB design process is viewed as an improved theory building process, developed for the purpose of synthesizing existing MLTB principles and collective MLTB constructs into a single-level theory building model and advancing theory building in HRD.

Table 16 MLTB Research Design: A Three Component Model		
Three component approach to MLTB	Research Study Design	Philosophy-Theory-Research Interaction
Theoretical inquiry paradigm or interpretive framework (Denzin and Lincoln, 2008, pp.19-23)	Conceptual development of theoretical phenomenon of interest (Kozlowski & Klein, 2000, p. 13). Alignment of a research philosophy with theoretical research, and empirical research components of theory building considerations.	Linking theoretical paradigm to theoretical research
The theory research side of Dubin's (1969,1978) Theory-Research Cycle	Theory research meaning theory building: • Units • Laws of interaction • Boundaries • System states	Linking theory research to empirical research
The research operation side of Dubin's (1969,1978) Theory-Research Cycle	Empirical research meaning theory testing: • Propositions • Empirical indicators of key terms • Hypotheses • Testing	Linking empirical research to theoretical paradigm and theoretical research

Figure 2 is a simple hierarchical representation of an organization functioning in a larger social performance system. The hierarchical structure is depicted in individuals, teams, organization situated in a larger social performance system. It also highlights within and between analysis opportunities at each structural and functional component level of the illustration. The figure also makes a space for bottom up emergent processes labeled composition and compilation. Likewise, a top down influence can be modeled with this figure. The organization level of analysis has been identified as the focal unit of analysis in this study.

Figure 2 Phase Two: Multilevels Components.

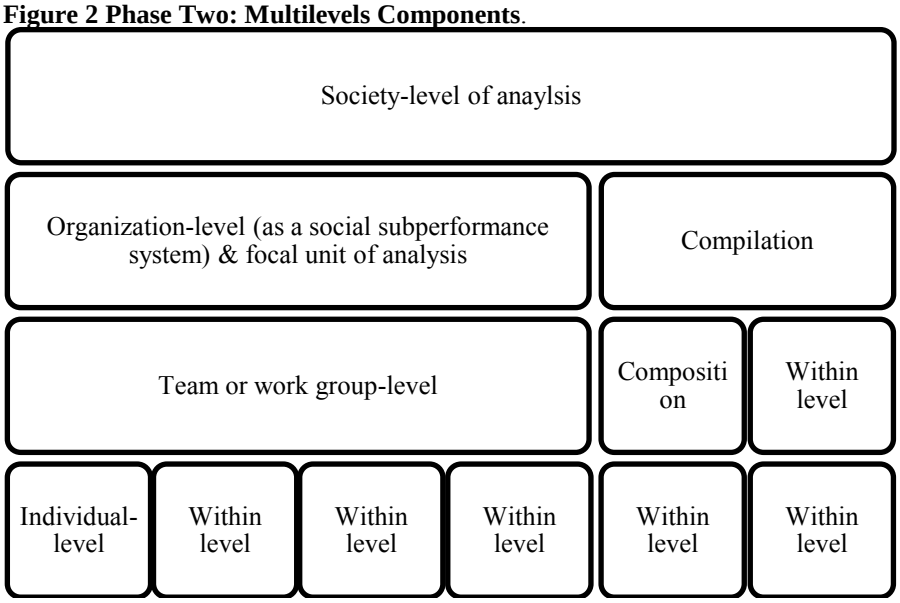


Table 17 represents notes of interest to the theorist-researcher to explicate levels of analysis to include the focal unit, unit of measurement, and the unit of analysis in order to prevent misspecification errors. The design option specified in Table 17 accounts for emergent process relevant to multilevel theory building.

Table 17 MLTB Design Option Considerations.
"*Composition models* are relevant when the interest is on forms of essentially the same construct th exist at different levels" (Kozlowski & Salas, 1997, p. 260). "*Cross-level models* are relevant when the interest is on the relationships among different construct that exist at different levels" (Kozlowski & Salas, 1997, p. 261). "*Multilevel models* assume the *constructs* comprising a model, including antecedents, mediators or moderators, and responses, and the *causal processes* linking those constructs are functionally ident at multiple levels. This requires composition among the constructs across levels *and* process relatio among constructs that are parallel across levels" (Kozlowski & Salas, 1997, p. 261). "Once the levels model has been determined, several methodological issues become relevant for its operationalization. These issues include specification of the focal unit or unit of theory, the unit of measurement for model constructs, and the level at which data will be analyzed to examine hypotheses. The *focal unit* or unit of theory refers to the essential level of the phenomenon of intere (Kozlowski & Salas, 1997, p. 261). "The *unit of measurement* refers to the level at which data are obtained for the phenomenon of inte *Level of data analysis* refers to the level at which a given phenomenon is addressed in a model for hypothesis testing. The level of data and analysis should be compatible with the unit of theory to av misspecification error, which leads to spurious conclusions (Kozlowski & Salas, 1997, p. 261). "…levels of analysis approach requires that the focal unit, unit of measurement, and the unit of analysis be made explicit. The specific constructs involved and the relevant levels incorporated in t model must be determined by (grounded in) the phenomenon of interest. Linkages among levels—compositional, cross-level, or multilevel—must be justified by clearly articulated theory, preferably with empirical support" (Kozlowski & Salas, 1997, p. 261).

In the improved MLTB methodology, there are three distinct components of the theory that must be established in the theory development process: Theoretical paradigm, theoretical research, and empirical research. Theory specification and operationalization generally follow Dubin's (1969/1978) two component theory development process (Theory research and empirical research) with Kozlowski and Klein's (2000) MLTB principles and Morgeson and Hofmann's (1999) collective MLTB construct specification and operationalization synthesized into Dubin's theory building model. Having established the foundation for theory building and MLTB components, the next set of considerations is to ground the phenomenon of interest into the new MLTB model to develop a theory of scenario planning. The next chapter, Chapter IV, will focus on using this methodology for developing a multilevel theory of SP. After conducting the MLTB process for this study, future research will likely include a

review of the improved methodology developed in this study and continued refinement of both the resulting methodology and resulting multilevel theory of SP.

CHAPTER IV

THEORY OF SCENARIO PLANNING

Theory building in Chapter III began with revising Dubin's (1969/1978) post-positivist, single-level theory building model into a MLTB model while retaining its functionalist paradigm in order to attend to social structure and function. Next, multilevel theory building principles (Kozlowski & Klein, 2000) were synthesized into Dubin's eight-step theory building model to explicate patterns of social interaction. Next, guidelines for collective MLTB constructs (Morgeson & Hoffman's, 1999) were synthesized into Dubin's model to explicate an ordered system of meaning making and of symbols. With a new interpretive MLTB model, it is now possible to pull SP as the phenomenon of interest through to facilitate SP theory building. Grounding SP in an interpretive MLTB model makes it possible to explain organizational behavior which is to study organizational culture. Organizational culture will be referenced throughout the remainder of Chapter IV as "organizational self". Even with an appreciation for organizational self, SP theory building must remain mindful that organizations are not unitary actors, but are social subperformance systems functioning within larger social performance systems.

In the methodology for interpretive multilevel theory building (MLTB) developed in Chapter III; theoretical paradigm, theoretical research and empirical research were the theory building components put forth along with their interaction. While the three component parts may be constructed in a non-sequential manner, it is recommended that the theorist-researcher define the research study's theoretical paradigm as a prerequisite to entering Dubin's (1969/1978) theory-research cycle. Once inside the theory-research cycle, defining

elements of each component do not necessarily require a stepwise approach. In Chapter IV, SP theory development will follow the order of the three theory building components, beginning with explicating a theoretical paradigm. The next task is to develop the theoretical research model to connect the theory building philosophy with theory building research. Thirdly, an empirical research component will be framed to facilitate future theory testing. Prior to developing SP theory, it should be noted that SP is practiced within and on behalf of organizations which are themselves social subperformance systems. Therefore, any theory of SP must take into consideration organizations as social structures in action, as well as meaning making that occurs within organizations. Geertz (1973) believed culture and social structure are…different abstractions from the same phenomena, "The one considers social action in respect to its meaning for those who carry it out, the other considers it in terms of its contribution to the functioning of some social systems" (p. 145). This theory building study embraces Geertz's understanding of culture and social structure as different abstractions of the same phenomena. In order to differential and integrate culture and social structure, this study borrows from the pure science of sociology for an interpretive understanding of social action and causal explanations of its course and effect (Weber, 1947).

According to Parsons and Shils (1951) social action of organizations is understood through a cultural lens, "…a cultural system is a pattern of culture whose different parts are interrelated to form value systems, belief systems, and systems of expressive symbols" (p. 55). The cultural system in this study is represented by organizational self or in van der Heijden's (1996) terminology the business idea. It was Parsons (1968) that connected social action with a time category, "The first important implication is that an act is always a process

in time. The time category is basic to the scheme" (p. 45). Therefore, to represent organizations as social subperformance systems in action SP theoretical research units will incorporate Parsons (1951) theory of action units: (a) actor(s), (b) a situation of action, and (c) orientation of the actor to its action situation (Parsons, 1951). SP theory building grounded in a theory of action equips organizational self (the actor) to develop strategy in order to manage contextual change. Thus, SP theory building end state is concerned with developing organizational strategy (policy and action planning).

Managing contextual change dictates that business strategy represented in organizational self be validated periodically to ensure organizational self remains relevant to contextual change. Organizational self is simply the actor in Parsons (1951) theory of action that needs to orientate itself to its action situation. Strategy orientation processes used in this study is SP. SP orientates a constantly changing organizational self to its constantly changing, uncertain contextual environment. In other words, SP serves as a counterbalance to organizational self where SP participants test the robustness of the business idea through an iterative fusion of horizons (Gadamer, 1965/1975) facilitated by equally plausible future orientated scenarios. In conclusion, SP theory building schema in this study includes three theory building components: theoretical paradigm, theoretical research, and empirical research. Within the theory-research cycle components, subschema are presented distinguishing features of meaning making within an organization, as well as patterns of social interaction. Chapter IV concludes with connecting philosophical hermeneutic philosophy as the theoretical paradigm with a newly constructed interpretive, MLTB model in which to ground SP phenomenon into resulting in an interpretive, multilevel theory of

scenario planning. Future research will be explored in Chapter V and will include recommendations to test and further refine the resulting interpretive, multilevel theory of scenario planning.

Linking Scenario Planning with a Theoretical Paradigm

Theorist-researchers need to make their theoretical paradigm explicit when conducting theory building and empirical research on a phenomenon of interest in order to ground their research study within an interpretive framework. Swanson (2007) argued, "Without a theory framework, there is a sense of randomness and incoherence to theory discussions and development" (p. 322). Denzin and Lincoln (2008) put forth, "The net that contains the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm*, or an interpretive framework, a 'basic set of beliefs that guides action'" (p. 19). According to Denzin and Lincoln, "A researcher design describes a flexible set of guidelines that connect theoretical paradigms first to strategies of inquiry and second to methods for collecting empirical materials" (p. 22). For the purpose of this study, the flexible design process begins with defining SP (scenario planning) as the phenomenon of interest. Chermack and Lynham (2002) advanced the following definition of SP which will be used in this study, "Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improving performance" (p. 376). The next consideration for this study is to link SP as the phenomenon of interest to a theoretical paradigm. The metaphysical framing used in this study includes the phenomenon of interest,

theory building philosophy, ontology, epistemology, methodology, and methods for conducting research.

As a research philosophy, philosophical hermeneutic represents a mode of man's being in the world seeking a self understanding (Gadamer, 1965/1975) which is akin to the role SP participants fulfill during scenario planning. Table 18 is a representation SP theory building grounded to the philosophical hermeneutic project. It should be noted Gadamer (2006) believed, "Philosophical hermeneutics…has a subject matter in its own right" (p. 46).

Table 18 Scenario Planning Theory Building grounded in Philosophical Hermeneutical Project.

Assumption of scenario planning strategist	"Scenario planning assumes that there is irreducible uncertainty and ambiguity in any [future strategic action] situation faced by the strategist, and that successful strategy can only be developed in full view of this" (van der Heijden, 1996, p. 8).
Compelling need for SP theory building philosophy	Without specifying a theory building philosophy as a formal component of SP theory building the theoretical research model would be unstable and possibly adrift amongst multiples schools of thought. Secondarily, the empirical research model would not be equipped to address theory testing without a theory building philosophy to guide theoretical research and empirical research.
Scenario planning theory building grounded in philosophical hermeneutical philosophy	SP participants as a mode of being in the world interact with man's text (historicity, at-hand, and irreducible uncertain future represented by sets of scenarios) through a fusion of horizons (Gadamer, 1965/1975). Primary theory building philosophy principles at work include (a) SP participant's interpretive mode of being in the world, (b) experiential learning of SP participants in strategic conversation with fusion of horizons through hermeneutic appropriation (Gadamer, 1965/1975).

This subject matter is centered in an application-based question of a phenomenon. In the introduction of Linge's translation of Gadamer's (1976) book titled *Philosophical Hermeneutics*, he represented philosophical hermeneutics as, "Its [a] field of application…[centered in] situations in which we encounter meanings that are not immediately understandable but require interpretive effort….bridging the gap between the

familiar world in which we stand and the strange meaning…into the horizons of our world (p. xii).

The outcome of SP practice is not to identify one organization future, but an array of plausible future realities which is best represented by a relativist ontology meaning multiple plausible future realities. SP practitioners represent an interpretivist mode of being in the world and honor experiential learning as the preferred epistemology. In addition to considering centering the researcher in the world, consideration is needed in understanding where SP phenomenon occurs. For the purpose of this study, SP occurs within and between organizations. Which is why organizations are also represented as subperformance systems highlighting structure and function of organizations operating in much large social performance system context. Affording the MLTB theorist-researchers visibility into levels issues occur within and between social performance systems. After reviewing metaphysical framework of SP: who, what, when, where, and why. The theorist-researcher needs to define the studies Theory-Research-Development-Practice Cycle (Swanson, 1997).

This study theory-research-development-practice cycle (Swanson, 1997) begins with theory construction. Theory-then-research theory building approach was chosen, in part, due to Dubin's (1969/1978) hypothetical-deductive theory building model for applied disciplines. In Dubin's (1969/1978) comprehensive theory building model, he differentiated between a theorist focus and the researchers focus in this way, "Coming from theory to research, attention is focused on truth, the nature of reality, the process of knowing, and the logic of meaning statements. Starting from research and moving toward theory, attention turns to such issues as measurement in all its phases, translation of propositions into operational

terms, and the reliability of empirical indicators" (p. 17). The research design for this study is concerned with truth, the nature of reality, the process of knowing, and the logic of meaning statements. The general method of theory-building in applied discipline (Lynham, 2002b) is represented by a deductive to inductive theory building approach resulting in the MLTB model constructed in Chapter III.

A MLTB methodology is used in this study's design in order to collect data and analyze data organization-related empirical data from a functionalist paradigm where levels issues such as structure and function occur within and between social subperformance systems. During the empirical research component of theory testing two distinctly different research methods will be employed in order to attend to philosophic hermeneutic philosophy and functionalist paradigm. The hermeneutic circle part-whole analysis stems from philosophic hermeneutic philosophy and will be accomplished in this study by cognitive mapping research. Whereas, structural and functional analysis associated with the functionalist paradigm will be accomplished through quantitative research. In summary, a mixed method research is needed during the empirical research component of this study in order to test both foundational and antifoundational elements of SP phenomenon.

Table 19 links SP as the phenomenon of interest to a theoretical paradigm.

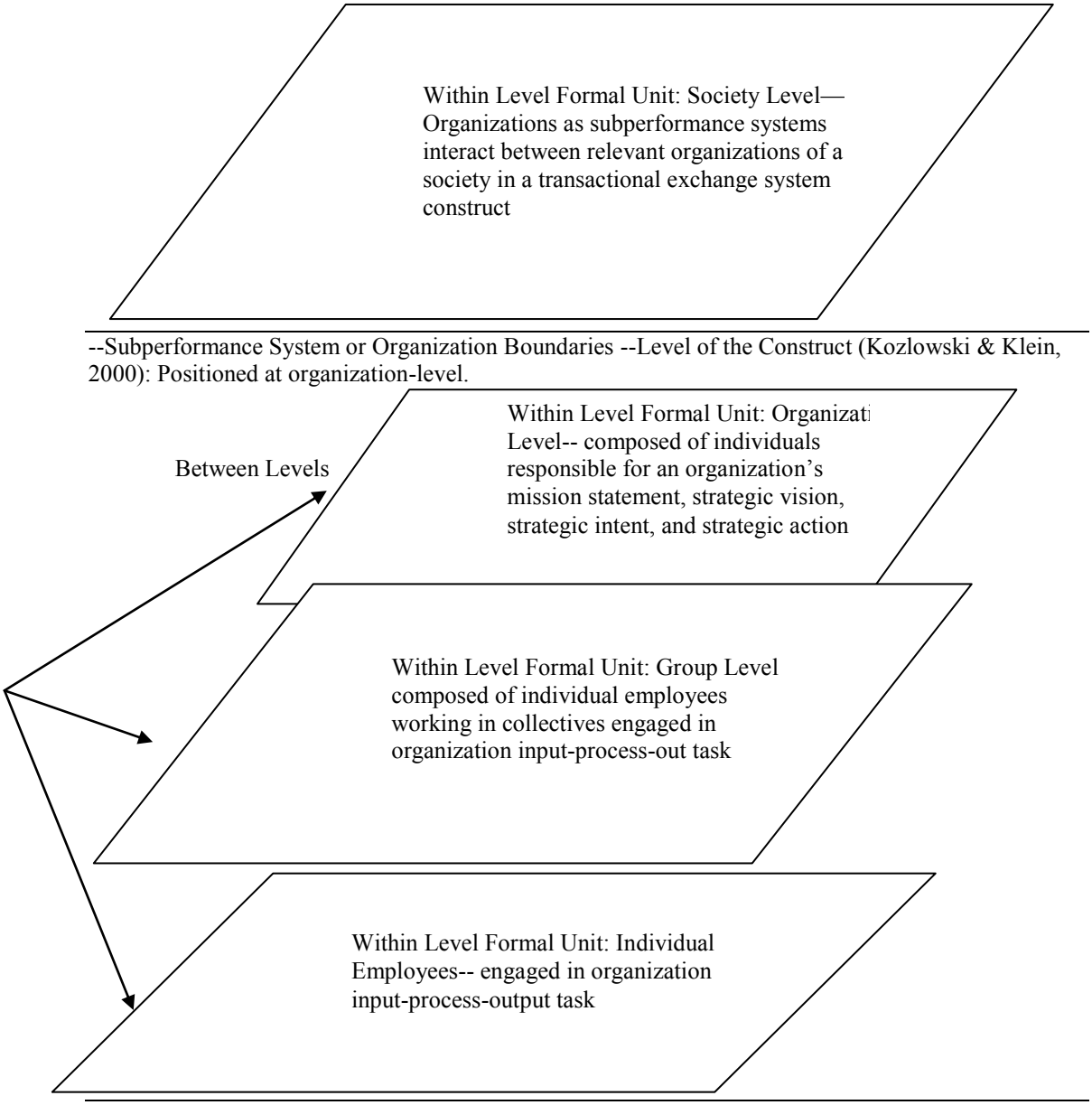
Table 19 Linking Scenario Planning Phenomenon to the Studies Theoretical Paradigm.	
Phenomenon of interest	"Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the futur may be played out, for the purpose of changing current thinking, improving decision making, enhancing human and organization learning and improvin performance" (Chermack & Lynham, 2002, p. 376).
Form of theory	Substantive, conjectural nature of the future (Bell, 2003; Walton, 2008)
Theory building philosophy	Philosophical hermeneutic philosophy represents a mode of man's being in the world seeking a self understanding (Gadamer, 1965/1975). Philosophical hermeneutic understanding is conceived not in the traditional way as an act of human subjectivity but as the basic way of [our] being in the world (Gadamer, 1965/1975).
Scenario Planning is Action Planning	Scenario planning is action planning (Walton, 2008). Theory building incorporated theory of action units (Parsons, 1951) into the SP theory model, since SP is a theory of strategic planning and action.
General Method of Theory-Building in Applied Discipline (Lynham, 2002b)	A deductive to inductive theory building process will inform a MLTB model for use in grounding scenario planning as the phenomenon of interest.
Theory-then-Research approach to theory building	"Coming from theory to research, attention is focused on truth, the nature of reality, the process of knowing, and the logic of meaning statements. Starting from research and moving toward theory, attention turns to such issues as measurement in all its phases, translation of propositions into operational terms, and the reliability of empirical indicators" (Dubin, 1969/1978, p. 17).
Scenario planning ontology	Scenario planning phenomenon is antifoundational meaning it is neither objective nor subjective (Smith, 1993). Scenario planning consists of a relativist ontology meaning multiple plausible future realities.
Scenario planning epistemology	Scenario planning is neither objectivist nor subjectivist, but a mode of being in the world (Gadamer, 1965/1975). Philosophical hermeneutic philosophy approach to theory building lends itself to understanding man's mode of being in the world.
Scenario planning theory building methodology	A multilevel theory building methodology is employed to understand levels issues within and between organizations. Functionalist paradigm implications exist for SP context, because levels issues occur within and between social subperformance systems that function within larger social performance systems.
Scenario planning theory building methods	• Hermeneutic; dialectic; cognitive mapping. • "[Hermeneutics] is concerned not so much with understanding more correctly (and thus with providing norms for valid interpretation) as with understanding more deeply, more truly" (Palmer, 1969, p. 215). • Quantitative research will also be used to analyze structural and functional aspects of SP occurring within and between social performance systems.

After review the metaphysical who, what, where, and why of SP phenomenon, additional research study design considerations need to be addressed when entering the theory-research cycle (Dubin, 1969/1978). The next consideration for this study is to link the research philosophy to the theory-research cycle (Dubin, 1969/1978). Describing the theory components of SP will follow Dubin's (Dubin, 1969/1978) four-step theory building model.

Theoretical Research Meaning Theory Building

Since SP is strategy research conducted on behalf of an organization, it is necessary to understand how SP theoretical units function within an organization. Figure 3 explicates the level of SP theory at the organizational level. It also depicts three levels of analysis within a social subperformance system (i.e. organization-, group-, and individual-level). Lastly, to illustrate organizations interact across transactional exchange boundaries within and between organizations within a society, a society level unit of analysis is cited. It should be noted that organizations are not autonomous, but dependent upon inputs/outputs from relevant social subperformance systems functioning with society.

Figure 3 SP Theoretical Units Illustrated in an Organization Hierarchical Relationship.



Source: Upton, 2006, p. 189.

In addition to conceptualizing hierarchical attributes or organization levels of social subperformance systems, Kozlowski and Klein (2000) put forth MLTB principles attending to theory specification that included theoretical collective construct types, temporal scope of constructs associated with point in the life cycle of a social entity, and entrainment cycles which are depicted in Table 20 illustrates a minitheory of where, when and how collective constructs form and manifest during the SP entrainment processes.

Table 20 Minitheory of Where, When and How a Collective Construct Forms and Manifests during t Entrainment Process of Scenario Planning Inquiry.

Collective Constructs	Construct Function	Theoretical Construct Origin/ Construct Manifest at Level Type	Form of Emergence	Descriptive Characteristics of Emergence Process
Organizational Self	Dominant leadership's espoused theory of organizational behavior for the social subperformance system	Corporate-level/ Direct effect on business units and individual employees	Shared properties informed by composition processes	Top-down linkage based on assumption of isomorphism
Situation of Action	It is that part of the external world (objects of orientation) which means something to the actor whose behavior is being analyzed	Corporate-level/ Direct effect on business units	Shared properties informed by composition processes	Top-down linkage based on assumption of isomorphism

Table 20 Continued.				
Collective Constructs	Construct Function	Theoretical Construct Origin/ Construct Manifest at Level Type	Form of Emergence	Descriptive Characteristics of Emergence Process
Scenarios	Scenarios are perception devices representing our best understanding of the range of uncertainty (contextual meaning and social performance system structure) when connecting man's text with multiple plausible future realities	Macro-level scenarios	Global	Originates and manifest at the unit level meaning no emergent properties exist
Experiential Learning	Experiential learning, an iterative learning cycle, locates the inquirer within the world to develop a self-understanding	Reciprocal process; Cognitive processes of individuals and collectivities	Configural properties informed by compilation processes	Omni directional contributions based on assumption of discontinuity
Strategic Action	Knowledge management activity implementing organizational self's entrepreneurial competitive advantage theories-in-use	Corporate-level/ Direct effect on business units	Shared properties informed by composition processes	Top-down linkage based on assumption of isomorphism

Developing the theoretical research model of SP will include the first four steps of Dubin's (1969/1978) comprehensive eight-step hypothetical-deductive, theory-then-research model of theory building for applied disciplines which include:

- Units of a theoretical research model of SP;
- Laws of interaction among the theoretical research units of SP;
- Boundaries of a theoretical research model of SP; and

- System states of a theoretical research model of SP

Each of the theoretical research units will be specified and accompanied by its definition and classification according to Dubin's (1969/1978) theory building criteria. Likewise, criteria for assessing the quality of each unit will be defined according to Dubin's theoretical research principles. The resulting four-step theoretical research model completes the identification of theoretical research component of SP according to Dubin's theory building model.

After making SP theoretical research model units explicit, an understanding of the laws of interaction (meaning linkages or relationships) among the units of the theoretical model will be developed. Following specification of laws of interaction amongst units of the theory, criteria for judging the quality of the laws of interaction will be framed in accordance with Dubin's (1969/1978) model. Immediately following specification of the laws of interaction, boundaries of the theoretical model of SP will be presented. Once the boundaries have been defined, criteria for judging the quality of laws of interaction will be specified. The fourth and final unit in constructing a theoretical research component of SP is system states. Therefore, system states of SP theoretical model of will be specified. Following the system state specification, criteria for judging the quality of system states will be presented. SP theory building will be completed at the point in time each of the four units of Dubin's theoretical research model has been properly specified.

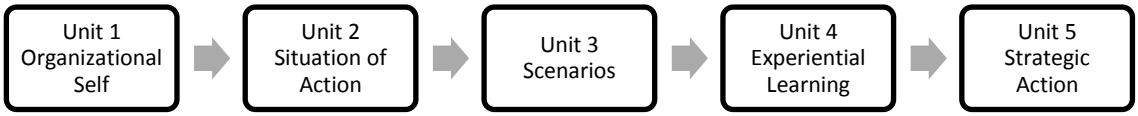
Step One: Selecting Scenario Planning Theoretical Research Units

For Dubin (1968/1978) theory building was an ordering process, "The only instrument employed [by the observer and from here forward called a theorist] in the ordering process is the human mind and the "magic" of human perception and thought" (p.7). In principle, "The theorist has unlimited opportunities to employ units of his [her] choice. Once he [she] has made his [her] selection, the constructed models must conform to the limitations set forth…for employment and combination of units" (Dubin, 1969/1978, p. 27). Dubin (1969/1978) argued, "Units are not theories. A collection of units that are called the subject matter of a scientific discipline does not constitute the theory of that discipline" (p. 28). In addition to informing the theorist-researcher that units are not theory Dubin defined units as the starting point for theory development, "A theoretical model starts with things or variables, or (1) units whose interaction constitute the subject matter of attention" (p. 7). A typology of units will be undertaken for the purpose of reaching conclusions about the kinds of units relevant to a theory of SP.

Equipped with an interpretive MLTB model, SP as the phenomenon of interest, and a theory building philosophy; entering the theory-research cycle and constructing a theoretical research model of SP is the next step. Philosophical hermeneutic philosophy as the theory building philosophy is neither objectivist nor subjectivist, but a mode of being in the world (Gadamer, 1965/1975). Like "…Gadamer seek[ed] to show that there is a truth that is revealed in the process of experience (*Erfahrung*) and that emerges in the dialogical encounter with tradition" (Bernstein, 1983, p 152), SP theory building is cut from the same cloth. Therefore, an underlying assumption of the proposed SP theory building model is a

mode of being in the social subperformance system's membership. Experiential learning occurs within and between SP participants during the dialogical encounter with tradition influencing an organization's business idea or organizational self. The proposed SP theoretical research model units (or concepts) consist of: Organizational self, action situation, scenarios, experiential learning, and strategy.

Figure 4 Scenario Planning Theoretical Units.



Source: Chermack, 2003b, p. 206.

Figure 4 is a graphical representation of the theoretical units of Scenario Planning Phenomena. Specifying theoretical units of SP theory and their interaction constitute the subject matter of theory building attention. Dubin (1969/1978) avered, "It is only when the units are put together into models of the perceived world that theories emerge" (p. 38). The first SP theoretical unit (or concept) is organizational self.

Unit 1—Organizational self

Organizational Self (Emery & Trist, 1965; Geertz, 1973; Parsons, 1951; van der Heijden, 1996; Wack, 1985a) is selected as a SP theoretical research unit, because it represents the current and perishable theories of action (*espoused theory)* (Argyris & Schön, 1978) of organizational behavior that the dominant leadership of an organization has for its social subperformance system. According to Argyris and Schön (1978), an organizations

espoused theory is conceptualized in "…formal corporate documents such as organizational charts, policy statements, and job description…." (p. 15). Since the organization self construct is in the first place a cognitive device (van der Heijden, 1996) it is essential for the theorist-research to account for hierarchical structure and function (which are subject to reorganization during organization life cycles) of an organizations social subperformance system as units of analysis. Organization structure consists of human resources situated within the social subperformance system members working independent work task, individuals functioning in groups/teams/branches/divisions, as well as the organization as a collective whole functioning is a larger social performance system. While organization function is represented by an input-process-out transactional exchange model.

Definition

In Parsonian (1951) terminology, "A social object is an actor, which may in turn be any given other individual actor (alter), the actor who is taken as a point of reference himself (ego), or a collectivity which is treated as a unit for purposes of the analysis of orientation" (p.4). Parsons categorized organism (or organizations) as subsystems in his theory of action, "But for the theory of action the organism is not a system, but a *unit point of reference*…It is *this relational system which is the system of action*, not the organism as a system" (p. 542). This study is using Parsons' description of social object and applying it to "Organizational Self" which is viewed as a point of reference in SP theory. Table 21 illustrates how formal organizations are social subperformance system functioning in a relational system of action.

Table 21 Formal Organization Conceptualized as a Social Subperformance System.	
Organization represented as a social subperformance system	An organization is a system which, as the attainment of its goal, 'produces' an identifiable something which can be utilized in some way by another system; that is, the output of the organization is, for some other system, an input….In any of these cases there must be a set of consequences of the processes which go on within an organization, which make a difference to the functioning of some other subsystem of the society; that is, without the production of certain goods the consuming unit must behave differently, i.e., suffer a 'deprivation' (Parsons, 1960, p.17).
Organizations function in larger social performance system context	"Since a social system is a system of processes of interaction between actors, it is the structure of the *relations* between the actors as involved in the interactive process which is essentially the structure of the social system. The system is a network of such relationships" (Parsons, 1951, p. 25).

Geertz (1973) portrayed organizational self as different abstractions (culture and social structure) from the same phenomena, "The one considers social action in respect to its meaning for those who carry it out, the other considers it in terms of its contribution to the functioning of some social systems" (p. 145). SP theory is concerned with meaning making by SP participants (membership of an employing organization), as well as the multilevel social structure it which action is taken.

Description

From the rationalist school of thought, Table 22 illustrates an organizations theory of action by defining espoused theory, mission statement, strategic vision, and strategic intent.

Table 22 Organizational Self is a Motif of Cognitive Devices.	
Espoused Theory Defined	"When someone is asked how he [she] would behave under certain circumstances, the answer he [she] usually gives is his [her] espoused theory of action for that situation. This is the theory of action to which he [she] gives allegiance and which, upon request, he [she] communicates to others" (Argyris & Schön, 1978, p. 11). An organizations espoused theory is conceptualized in "…formal corporate documents such as organizational charts, policy statements, and job description…." (Argyris & Schön, 1978, p. 15).
Mission Statement	"Rationalist strategy making starts with the definition of a purpose of the organization. This is often called the 'mission'" (van der Heijden, 1996, p. 26). Mission is about [an enduring or timeless concept] culture *and* about strategy…it is an organization's character, identity and reason for existence….Mission provides the rationale for [organization] action (Campbell & Yeung, 1991, p. 145).
Strategic Vision	"[Macro-level worldview] capability options indicate potential development territory towards the Business Idea of the future (the Strategic Vision)" van der Heijden, 1996, p. 144).
Strategic Intent	Strategic intent is a concept that draws from both vision and mission. It includes a desired future state, a goal defined in competitive terms that is more a part of vision than of purpose" (Campbell & Yeung, 1991, p. 146).

Classification of the unit

Regarding general scientific distinctions of units, scenarios are classified as an enumerative, attribute, sophisticated, collective, real, configural, and catalyst unit. Scenarios have an enumerative property, in that; they are present and hold constant in all conditions of SP phenomena. Since scenarios are present in all systems states of SP theory, scenarios possess attribute characteristics. Because scenarios are well defined (Burt, 2007, Chermack, 2004b; Chermack & Lynham, 2002; van der Heijden, 1996; Ringland, 1998), they are considered sophisticated units (Dubin, 1969/1978). Scenarios carry a collective quality in SP theory, because they operate in sets of scenarios. Scenarios have a real quality to them because the researcher can secure empirical indicators of the unit. Scenarios are classified as

possessing configural properties, because lower-level unit properties emerge toward higher-level collective phenomena through compilation processes.

Criteria for judging scenario construction quality when understood from a critical realist perspective have previously been put forth by Wilson (1998). While this study has not conducted an in-depth analysis of the critical realist theoretical paradigm or perspective, Wilson's qualitative criteria for judging scenario construction are considered applicable to the study. The five criteria for judging scenario construction include: Plausibility, differentiation, consistency, decision-making utility, and challenges world views (Wilson, 1998). Walton (2008) summarized Wilson's five underpinning criteria for constructing alternative scenarios within organizations in this way:

Plausibility: The selected scenarios must fall within the limits of what might conceivably happen.

Differentiation: Each scenario constructed should be sufficiently different for it not to be construed as variations of a base case.

Consistency: The logical reasoning contained in a scenario must not have any in-built inconsistency that would undermine its credibility.

Decision-making utility: Each scenario should contribute sufficient insights into the future to bear on the decision focus selected.

Challenge: The scenarios should challenge the organization's conventional wisdom about the future (p. 157).

Wilson's criteria for judging scenario construction contributes to theory building logic of this study. It should be noted, however, criteria for judging scenario construction may not be

sufficient criteria for judging SP theory quality. Criteria for judging SP theory will be address later within the study.

Scenarios also serve as a catalyst unit in SP theory. Dubin (1969/1978) argued for a concept widely used in chemistry and its application in the social sciences, "The catalyst unit is defined as a chemical agent whose presence in a chemical system is necessary in order that two or more other chemical interact. The catalyst remains unchanged in the course of the interaction for which its presence is necessary" (p. 115). The necessary and sufficient catalyst condition is satisfied by the unit scenarios, in that, scenario planning theory building cannot proceed when scenarios has a value of zero. Dubin (1969/1978) represented the law of interaction between a catalyst unit and other theoretical units in this way, "Given two units, U_A and U_B, U_A and U_B interact by law L if, and only if, the catalyst U_C has a nonzero value (this is only a sufficient condition). The values of U_A and U_B defined by law L are independent of the nonzero values of U_C (this is the necessary condition)" (p. 117).

Unit 2— Situation of action

A situation of action construct causes the theorist-researcher to account for transactional exchange interdependency relationships that are only maintained as long as relationships are mutually beneficial to interacting organizations. A situation of action creates a space for the theorist-researcher to accounting for change occurring in time within and between the action domains of organizations functioning in a larger social performance context. Action occurring in time is change which could account for why van der Heijden (1996) argued for an organizational change management strategy when he stated, "Strategy development can be interpreted as considering this Business Idea against the outlook for the

environment [situation of action]" (p. 56). Likewise, Rummler and Brache (1995) posited, "An adaptive structure helps an organization thrive in an environment of continuous change" (p.184). Throughout this study, the term situation of action is utilized in lieu of a biological metaphor term like environment.

Definition

According to Parsons (1951), a *situation* of action is, "…that part of the external world which means something to the actor whose behavior is being analyzed. It is only part of the whole real of objects that might be seen. Specifically, it is that part to which the actor is orientated and in which the actor acts. The situation thus consists of objects of orientation" (p. 56). To add further clarity the term situation of action and it's used in this study, the theorist-research needs to attend to internal/external contextual and structural areas of interest for formal organizations in order to prevent misspecification errors. Lastly, in a system of action an economic or supply and demand relationship between at least two dissimilar organizations would be viewed as a subschema of action in which they are structural connected as long as the transactional exchange relationship is interdependent or mutually beneficial (Parsons, 1951).

Description

Table 23 is a simple representation of organizational self fulfilling the role of actor in social theory of action.

Table 23 Concept of "Organizational Self" Framed in the Role of Actor in a Theory of Action.	
Theory of action	"The *frame of reference of the theory of action*, involves actors, a situation of action, and the orientation of the actor to that situation. One or more *actors* is involved. An actor is an empirical system of action. The actor is an individual or a collectivity which may be taken as a point of reference for the analysis of the modes of its orientation and or its processes of action in relation to objects. Action itself is a process of change of state in such empirical systems of action. A *situation* of action is involved. It is that part of the external world which means something to the actor whose behavior is being analyzed. It is only part of the whole real of objects that might be seen. Specifically, it is that part to which the actor is orientated and in which the actor acts. The situation thus consists of objects of orientation. The *orientation of the actor to the situation* is involved. It is the set of cognitions, cathexes, plans, and relevant standards which relates the actor to the situation" (Parsons, 1951, p. 56).

Parsons (1960) described who, how and when an organization functions within a situation of action (larger social performance system context), "An organization is a [social subperformance] system which, as the attainment of its goal, 'produces' an identifiable something which can be utilized in some way by another [social subperformance] system; that is, the output of the organization [social subperformance system] is, for some other [social subperformance] system, an input….In any of these cases there must be a set of consequences of the processes which go on within an organization [social subperformance system], which make a difference to the functioning of some other subsystem of the society; that is, without the production of certain goods the consuming unit must behave differently, i.e., suffer a 'deprivation'" (p.17). In considering organizations as subperformance systems, their internal interdependencies (Emery & Trist, 1965) function cohesively while the subperformance system-subperformance system transactional interdependency (Emery & Trist, 1965) exchange relationship functioning in a larger social performance system (i.e. societal- or global-level of analysis) is more variable and less predictable than internal processes to a subperformance system. In order for an organization to function as a simple

input-process-output model, its Organizational Self (or Business Idea) must ensure transactional interdependency exchange relationships within its society to exchange goods/services in order to achieve its strategic objective(s).

Classification of the unit

Regarding general scientific distinctions of units, situation of action is classified as possessing the following properties: enumerative, attribute, sophisticated, collective, member, and a configural unit. Situation of action has an enumerative property, in that; it holds constant in all conditions of SP phenomena. Dubin (1969/1978) avered, "The only condition that needs to be met is that the indicator never produce[s] a zero value" (p. 187). Additionally, an attribute is defined as the property of a thing always being present (Dubin, 1969/1978). The situation of action construct is selected because it possess the attribute property of being present in all instances of SP practice, as well as serves as an action theory point of reference. Because situation of action is well defined (Chermack & Lynham, 2002; van der Heijden, 1996), they are considered sophisticated units (Dubin, 1969/1978). Situation of action is classified as both a collective and member unit because of the hierarchical nature of social subperformance systems. Specifically, individuals working in collectives (dyads, teams, groups, etc.) represent collective entities within an organization. Likewise, individuals working independently on organization-related work tasks may act at the boundary of an organization in transactional exchange interaction relationships.

The situation of action construct is predicted to originate at the corporate-level at the point in time that a social subperformance system is forming or adjourning (Tuckman & Jensen, 1977) with top-down contextual influences throughout the organization based on an

assumption of shared collective construct properties and compositional processes (Kozlowski & Klein, 2000). However, during other organization life cycle stages emergence is predicted to possess configural properties and emerge bottom-up through compilation processes (Kozlowski & Klein, 2000). It should also be noted that during SP inquiry which is itself an entrainment processes, emergence is predicted to originate through omni directional contributions of SP participants based on an assumption of configural properties and discontinuity processes (Kozlowski & Klein, 2000).

Unit 3-- Scenarios

It is impossible to exactly describe the future which contributes to a condition of ontological uncertainty during strategy formulation processes. Therefore, scenarios are selected as a SP theoretical research unit and serve as catalyst perception devices (van der Heijden, 1996) for SP participants to test organization self theories-in-use (Argyris & Schön, 1978) against multiple plausible endogeneous/exogenous future realities during experiential learning (Gadamer, 1965/1975). Man's dialectic interaction with temporal text (historicity of man, present-at-hand, as well as projectedness toward future possibilities) through hermeneutic appropriation (Gadamer, 1965/1975) is facilitated by using plausible hypothetical scenarios as proxy for ontological certainty. Since the future cannot be known in advance, scenarios represent our best understanding of the range of uncertainty (contextual meaning and social performance system structure) in plausible future situations of action. Scenarios are utilized by SP participants as test conditions for Organizational Self "…as a means to think through future policies and decisions" (van der Heijden, 1996, p. 56). Linking scenarios to specific types of decision-making effectively links them to strategic planning

and ultimately to strategic action which is the ultimate reason for scenario planning (Wilson, 2000).

Definition

Scenarios as described by van der Heijden's (1996) was found to be useful in SP theory building were hypothetical scenarios are postulated as multiple plausible futures, "…set[s] of reasonably plausible, but structurally different futures. These are conceived through a process of causal, rather than probabilistic thinking, reflecting different interpretations of the phenomena that drive the underlying structure of the business environment" (p. 29). For information regarding how scenario planning is integrated with a systems thinking approach to scenario development, please refer to the scholarly work of Chermack & Lynham, 2002; Chermack, Lynham, & Ruona 2001; Godet, 2000; Provo, Ruona, Lynham, & Miller, 1998; Shoemaker, 1995; van der Merwe, 2008; Wack, 1985a). Scenario generating methods is considered outside the scope of this study which concerned with building an interpretive, multilevel theory of SP phenomenon.

Description

Consistent with this studies focus on multilevel organization-related SP phenomena occurring within and between social subperformance systems Table 24 illustrates how scenarios place future structural (van der Heijden, 1996) and contextual (Chermack and Swanson, 2008) uncertainty on the strategic agenda. Specifically, the table connects philosophical hermeneutic philosophy with elements of a scenario. It also illustrates sets of scenarios serving as proxy for future situations of action during experiential learning. Hypothetical futuristic scenarios are portrayed as test conditions for organizational self

theories-in-use. It was also important to note in the table, why an irreducible uncertain future action situation assumption drives causal inference logic rather than probabilistic logic. Lastly, a description of macro- and micro-level scenario focus areas is offered.

Table 24 Philosophical Hermeneutic Philosophy informing the Application of Scenarios.	
Philosophical Hermeneutic Philosophy Informing Scenario Elements	Philosophical hermeneutic understanding is conceived not in the traditional way as an act of human subjectivity but as the basic way of being in the world (Gadamer, 1965/1975). As a mode of being in the world seeking a self understanding (Gadamer, 1965/1975) man dialogically interacts with cultural text in a fusion of horizons (historicity of man, present-at-hand, as well as projectedness toward future possibilities) analyzed using hermeneutic appropriation of knowledge (Gadamer, 1965/1975). "The scenario is a story, a narrative that links historical and present events with hypothetical events taking place in the future. In order to establish plausibility each scenario should be clearly anchored in the past, with the future emerging from the past and the present in a seamless way" (van der Heijden, 1996, p. 213).
Scenarios are proxy for irreducible structural and contextual uncertainty of the future action situation	"The scenarios themselves are not the decision calculus indicating whether or not to go ahead with a project, they are a mechanism for producing information that is relevant to the decision" (van der Heijden, 1996, p. 16). "Scenarios are…vehicles for exploring the emergent nature of the contextual environment and its impact on organizational strategy" (Chermack & Swanson, 2008, p. 100).
Scenarios function as test conditions for Organizational Self	"The scenarios can be seen as the test conditions for the Business Idea. They are used as a means to think through future policy and decisions" (van der Heijden, 1996, p. 56).
An assumption of ontological uncertainty drives causal inference logic rather than probabilistic logic	"…scenarios are a set of reasonably plausible, but structurally different futures. These are conceived through a process of causal, rather than probabilistic thinking, reflecting different interpretations of the phenomena that drive the underlying structure [and context] of the business environment" (van der Heijden, 1996, p. 29).
Macro-level scenarios	"…global scenarios used by top managers to establish the overall strategic framework" (van der Heijden, 1996, p. 21).
Micro-level Scenarios: Individual-level and collective-level	"Focus scenarios…are of a more ad hoc nature, developed by departments to aid in lower level decision making" (van der Heijden, 1996, p.21). "Internal scenarios belong to a person and relate to his/her anticipation of future states of the interactional world, as it relates to the 'self'…An internal scenario is a causal line of argument, linking an action option with a goal…The person will play a role in his/her own internal scenario. It can be seen as one path through a person's cognitive map" (van der Heijden, 1996, p. 5).

Classification of the unit

Regarding general scientific distinctions of units, scenarios are classified as an enumerative, attribute, sophisticated, collective, real, configural, and catalyst unit. Scenarios have an enumerative property, in that; they are present and hold constant in all conditions of SP phenomena. Since scenarios are present in all systems states of SP theory, scenarios possess attribute characteristics. Because scenarios are well defined (Burt, 2007, Chermack, 2004b; Chermack & Lynham, 2002; van der Heijden, 1996; Ringland, 1998), they are considered sophisticated units (Dubin, 1969/1978). Scenarios carry a collective quality in SP theory, because they operate in sets of scenarios. Scenarios have a real quality to them because the researcher can secure empirical indicators of the unit. Scenarios are classified as possessing configural properties, because lower-level unit properties emerge toward higher-level collective phenomena through compilation processes.

Scenarios also serve as a catalyst unit in SP theory. Dubin (1969/1978) argued for a concept widely used in chemistry and its application in the social sciences, "The catalyst unit is defined as a chemical agent whose presence in a chemical system is necessary in order that two or more other chemical interact. The catalyst remains unchanged in the course of the interaction for which its presence is necessary" (p. 115). The necessary and sufficient catalyst condition is satisfied by the unit scenarios, in that, scenario planning theory building cannot proceed when scenarios has a value of zero. Dubin represented the law of interaction between a catalyst unit and other theoretical units in this way, "Given two units, U_A and U_B, U_A and U_B interact by law L if, and only if, the catalyst U_C has a nonzero value (this is only a

sufficient condition). The values of U_A and U_B defined by law L are independent of the nonzero values of U_C (this is the necessary condition)" (p. 117).

Unit 4—Experiential learning

Experiential learning is selected as a SP theoretical research unit because philosophical hermeneutics, the theory building philosophy, "seeks to show that there is a truth that is revealed in the process of experience (*Erfahrung*) that emerges in the dialogical encounter with tradition" (Bernstein, 1983 p. 152). According to Bernstein (1983), "The appeal to truth—a truth that enables us to go beyond our own historical horizon through a fusion of horizons—is absolutely essential in order to distinguish philosophical hermeneutics from a historicist form of relativism" (p. 151). The dialogical, dialectic encounter with man's tradition focused on man's text (historicity of man, present-at-hand, as well as projectedness toward future possibilities) moving between the parts toward the meaning of the whole (Gadamer, 1965/1975). When working with organizational self as a theoretical construct during experiential learning it is important to recall Spender's (1998) caution, "…we must not forget that the organization is an artefact…It is neither emergent, nor natural in the sense of being the natural offspring of other organizations" p.29). Understanding organization as artifact the proposed SP theory emphasizes learning and knowledge as antecedents of organization performance outcomes by describing "…development of higher level collective consciousness which lies behind the organization's self-referencing and autonomous cognition and behaviour" (Spender, 1998, p. 29). In addition to making explicit the socially constructed nature of organizations, the theorist-researcher must distinguish between

cognitive (individual and collectivity) level constructs occurring during organizational learning.

Experiential learning practices serves to call into question espoused theories of an organization. Once espoused theories have been called into question by SP inquirers (to include senior corporate-level leadership) during organizational learning, new causal relationships with their causal inferences can emerge from lower-level SP inquirers (subordinate to corporate-level SP inquirers). If during SP inquiry an organization espoused theories are challenged and "single-loop learning [SSL] is sufficient where error correction can proceed by changing organizational strategies and assumptions within a constant framework of norms for performance" (Argyris & Schön, 1978, pp. 20-21) minor adjustments are made without changes in the Strategic Plan. If, however, during SP inquiry espoused theories are challenged and, "*double-loop* learning [DLL] occurs when error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies, and objectives" (Argyris & Schön, 1978, p. 3) revisions to strategy schema documented in strategic policies and business unit action plans are required. Experiential learning enables SP inquirers to determine if either or both SLL or DLL error detection and correction are merited in an organization's theories in action.

Definition

Experiential learning, an iterative learning cycle, locates the inquirer within the world to develop a self-understanding. Gadamer (1965/1975) coming from a philosophical standpoint believed, "Heidegger was right to insist that what he called 'Thrownness' belongs together with that which is projected" (p. 232). Thrownness was a time reference into the

future and Heidegger and Gadamer were agreeing that for the fullness of existential structure and self-understanding one would need to consider historicity of man, present-at-hand, as well as projectedness toward future possibilities (Gadamer, 1965/1975). Heidegger also argued the hermeneutic circle provided a dialogic-dialectic interpretive encounter for humanity to develop a self-understanding by reflecting on man's text moving between the parts toward the meaning of the whole (Gadamer, 1965/1975). Gadamer explained Heidegger's projected nature of There-being structure in this manner, "That the structure of There-being is thrown projection, that There-being is, in the realization of its own being, understanding, must also be true to the act of understanding within the human sciences….There-being that projects itself in relation to its own potentiality-for-being has always 'been'. This is the meaning of the existential of 'thrownness'" (p. 234). When philosophical hermeneutic philosophy guides experiential learning, it locates the SP inquirer in the world for sense making purposes to develop an interpretive self-understanding (individual and collective cognition) which can be applied to organization learning (contextual meaning and social performance system structure) and inform an organization's theories in action.

Description

Whereas Heidegger and Gadamer argued there-being from an abstract philosophical orientation, this study's argues there-being from a theoretical research model perspective applying experiential learning to individual-level and collective-level cognitive processes. It is suggested that emergent properties of an activity system (Asch, 1952) such as an organization are of a distributed collective memory nature (Spender, 1998; Tsoukas, 1996;

Weick & Roberts, 1993). Therefore, this study is in agreement with van der Heijden and Eden (1998) to prevent misspecification errors, "…that an operational definition of organizational learning needs to account of, and emphasize, the characteristics of groups of people developing corporate behaviour together, rather than individuals (or organizations as unitary actors) learning" (p. 59). Experiential learning activities of SP inquirers (individual and collectivity) worldview assumptions are challenged by perception devices known as hypothetical scenarios serving as proxy for ontological certainty in multiple plausible situations of action. Once SP inquirer's worldview assumptions have been challenged during small group organizational learning sessions, organizational self espoused theories (Argyris & Schön, 1978) become open for re-evaluation. Scenario-based strategic thinking equips organizational membership (individuals and collectives) to frame and reframe worldviews during iterative experiential learning.

SP participants, as inquirers, are viewed as a community of practice (both a social and cognitive process) engaging in dialogic-dialectic, hermeneutic interaction grounded in fusion of horizons that enables SP participants to perceive contextual and structural change during experiential learning. Experiential learning occurring on behalf of an organization possesses configural properties, because lower-level organization unit properties emerge toward higher-level collective phenomena through compilation processes. Table 25 illustrates organizational learning and two types of cognitive learning (single-loop learning and double-loop learning) that must occur by SP participants to juxtapose organization self espoused theories against multiple plausible future realities.

Table 25 Organizational Learning.	
Organizational Learning	"…organizational learning might be understood as the testing and restructuring of organizational theories of action and, in the organizational context as in the indivi one…." (Argyris & Schön, 1978, p. 11). "But in order for *organizational learning* occur, learning agents' discoveries, inventions, and evaluations must be embedded organizational memory. They must be encoded in the individual images and the shared maps of organizational theory-in-use from which individual members will subsequently act. If this encoding does not occur, individual will have learned but organization will not have done so" (Argyris & Schön, 1978, p. 19).
Single-loop Learni	"*Members of the organization respond to changes in the internal and external environments of the organization by detecting errors which they then correct so as maintain the central features of organizational theory-in-use*" (Argyris and Schön 1978, p. 18). Single-loop learning is sufficient where error correction can proceed changing organizational strategies and assumptions within a constant framework o norms for performance" (Argyris & Schön, 1978, pp. 20-21).
Double-loop Learn	"*Double-loop* learning occurs when error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies, and objectives" (Argyris & Schön, 1978, p. 3). "*We will give the name "double-loop learning" to those sorts of organizational inquiry which resolve incompatible organizational norms by setting new priorities and weightings of norms, or by restructuring the norms themselves with associated strategies and assumptions*" (Argyris & Schön, 1978, p. 24). "In organizational double-loop learning, incompatible requirements in organizational theory-in-use a characteristically expressed through conflict among members and groups within th organization" (Argyris & Schön, 1978, p. 22). "Double-loop learning, if it occurs consist of the process of inquiry by which these groups of managers confront and resolve their conflicts" (Argyris & Schön, 1978, pp. 22-23).

Van der Heijden avered organizational self (also known as Business Idea), "…drive[s] the strategy of organizations… [that] already exist in the mental models used by mangers to make sense of the world…to focus the dialogue which needs to take place in each organization on the emerging strategic direction" (p. 80). Table 26 illustrates organizational self espoused theory prior to SP inquiry and organizational self theory-in-use negotiated during experiential learning.

Table 26 Organizational Self Theories of Action.	
Espoused Theory	"…formal corporate documents such as organizational charts, policy statements, and job descriptions often reflect a theory of action (*the espoused theory*) which conflicts with the organization's theory-in-use…. (Argyris & Schön, 1978, p. 15).
Theory-in-use	"…the theory of action constructed from observation of actual behavior) (Argyris & Schön, 1978, p. 15).

Van der Heijden (1996) noted, "a Business Idea is not valid for ever. It needs to be kept up to date" (p. 65). Generating and maintaining a relevant Business Idea it typically viewed as a competency facilitated by the corporate level of an organization (van der Heijden, 1996). SP theoretical units were chosen that would "…operationalize the co-alignment between a firm's business strategy and the firm's knowing/learning strategy…" (Vera & Crossan, 2003, p. 137). Table 27 highlights the who, when, where, why and how to juxtapose organizational self to ontological uncertainty using scenarios to facilitate SP inquirer experiential learning tightly coupled with OL activities to work through organizational self theories-in-use.

Table 27 Juxtapose Organizational Self to Situations of Action through Organization Learning activities to inform Organizational Outcomes.	
Who	SP participants are selected from the membership of an employing organization to serve in a community of practice (CoP). SP participants may be augmented by a diverse set of subject matter experts such as HRD professionals, historians, futurist, etc. during SP practices.
When	SP practice is an entrainment cycle activity where SP participants, acting as agents of an employing organizational, interacting socially and cognitively negotiating strategic plannin sense making and decision-making during deliberate or contingency planning.
Where	Organizations are a social subperformance system constructs meaning the theorist-research must account for individual and collective properties of organizational learning informing organization theory of action to prevent misspecification errors. Argyris and Schön (1978) noted, "Organization is an artifact of individual ways of representing organizations" (p. 16) "Organizational learning (OL) is the acquisition of new knowledge by actors who are able a willing to apply that knowledge in making decisions or influencing others in organizations' (Miller, 1996, p. 486).
Why	Scenario planning, as well as, organizational performance is rooted in a knowledge-based competitive advantage strategy (de Geus, 1988, 1998) where knowledge and knowledge management activities are valued organizational commodities.

Table 27 Continued.	
How	During community of practice activities experiential learning is accomplished through an interpretive fusion of horizons (Gadamer, 1965/1975) with man's text juxtaposed against a organization's current business idea and the uncertainty of multiple plausible future situatio of action. Informed by a philosophical hermeneutic philosophy and the conjectural nature uncertain future realities, SP participants acquire new knowledge through hermeneutic appropriation and attribute causal relationships based on causal inferences from the organizations operational domain. SP participants engage in constructing local theories-in- (Argyris and Schön, 1978) using an inductive, *a posteriori* form of knowledge, justificatio argument. Weick & Bougon (1986) avered, "The resulting *cause maps* provide cognitive structures that are imposed on events to create meaning, which means that cause maps ofte *are*, in fact, the organization" (p. 13).

Scenario planning from an experiential learning is an iterative small group process where SP participant's interpret and negotiate operational context considering the relevancy of an organization's business idea juxtaposed to uncertain action situations (contextual meaning and social performance system structure) where sets of orthogonal future-based scenarios depict future uncertainty (contextual and structural). Hermeneutical appropriation is accomplished during polycentric dialogic conversation where fusions of horizon (historical past, present state, and multiple plausible future realities represented by sets of scenarios) challenge and test SP participant's mental model worldviews in a nonoperational setting. The term "*world-view*" was developed by Dilthey according to Ermarth (1978) where, "This world-view is a combination of reflective, conscious awareness and pre-reflective interests and practical concerns. It relates one's own inner awareness to the world at large. The world-view is a meaning-structure which gives coherence to the individual's ongoing experience" (Ermarth, 1978, p. 119).

"The causal structure we assume to exist we use to link history with the future" (van der Heijden, 1996, p. 99). Regarding environmental analysis van der Heijden (1996) posited, "Perception begins with observations….once we perceive a pattern…we start thinking in

terms of causality. In this way we imply an underlying [social performance system] structure behind the events we are observing. We build a 'mental map' of reality. In this way environmental analysis makes it possible to test strategic visions, business ideas, strategies and plans" (p. 96). Strategic conversation (van der Heijden, 1996) is the SP language promoting individual and collective experiential learning enabling SP participant's to alter their paradigm or interpretive framework. It is the SP participant's mode of being in the world (Gadamer, 1965/1975) analyzing man's text through a cultural analysis (fusion of horizons) where experiential learning is transmitted dialogically and argued to counterbalance organizational self. The counterbalance process enables SP participants an opportunity to periodically sample changing operational context and social performance system structures.

Classification of the unit

Regarding general scientific distinctions of theoretical units, experiential learning is classified as an enumerative, attribute, sophisticated, real, member and collective unit. Experiential learning has an enumerative property, in that; it is always present. An attribute is the property of a thing being present where as a variable is only present in degrees (Dubin, 1969/1978). Experiential learning is present in the phenomena of SP and essential to scenario thinking. Because experiential learning is well defined it is considered a sophisticated unit. Experiential learning is well defined (Bernstein, 1983; Gadamer, 1965/1975; Gadamer, 2006), and considered sophisticated units. Experiential learning is a real unit, because the researcher can easily identify empirical indicators. Experiential learning has the quality of being both a member and collective unit, in that, members of an organization have produce

idiosyncratic cognitive maps while teams or work groups produce collective cognitive maps. Experiential learning is predicted to occur at a heterogeneous, individual (SP participant) level of analysis with top-down and bottom-up emergent processes.

The experiential learning construct is predicted to originate at the corporate-level at the point in time that a social subperformance system is forming or adjourning (Tuckman & Jensen, 1977) with top-down contextual influences throughout the organization based on an assumption of shared collective construct properties and compositional processes (Kozlowski & Klein, 2000). However, during other organization life cycle stages emergence is predicted to possess configural properties and emerge bottom-up through compilation processes (Kozlowski & Klein, 2000). It should also be noted that during SP inquiry which is itself an entrainment processes, emergence is predicted to originate through omni directional contributions of SP participants based on an assumption of configural properties and discontinuity processes (Kozlowski & Klein, 2000).

Analytical Strategies Representing Emergence of Individual and Collective Units in MLTB

While theoretical units for SP theory may possess a statistical characterization, the primary analytical strategy advanced in this study is qualitative data sampling and analysis directly supporting the studies research question. When operationalizing collective constructs Morgeson and Hofmann (1999) instructed, "…researchers may justifiably collect individual-level data. To collect data that are meaningful at the collective level, however, one must have a conceptual rationale for the level of measurement chosen" (p. 261). The conceptual rationale for collecting data at the individual level in this study is to treat individuals as informants regarding dialogic hermeneutical appropriation processes where SP participants

participate in small group polycentric sense making. During the sense making settings SP participants engage in fusion of horizons linking man's text (historicity, current condition with scenarios representing contextual uncertainty of multiple plausible future realities) when practicing SP on behalf of an employing organization. It is predicted that organization phenomenon has bottom-up emergence properties according to Kozlowski and Klein (2000) and is interactive, "A phenomenon is emergent when it originates in the cognition, affect, behaviors, or the characteristics of individuals, is amplified by their interactions, and manifests as a higher-level, collective phenomenon" (p. 55). The data-analytic strategy chosen for SP participants during the practice of SP, as well as confirm/disconfirm the proposed SP theory is cognitive mapping.

In 1948, Tolman coined the term "cognitive map" (CM) as an alternative to the stimulus-response school of psychologists (Neisser, 1976; Tolman, 1948). Eden's (2004) literature review informed us, "The formal basis for cognitive maps derives from personal construct theory (Kelly, 1991) which proposes an understanding of how humans 'make sense of' their world by seeking to manage and control it" (p. 673). Eden and Ackermann (1998) put forth, "Cognition belongs to individuals, not to organizations; the attribution of cognition to an organization is problematic and depends completely upon the legitimacy of reification" (p. 193). Langfield-Smith (1992) defined the intention of CM in this way, "The intention of drawing a cognitive map is to describe an individual's conscious perception of reality, with sufficient detail to capture the individual's idiosyncratic world view…" (p. 350). With CM linked to individual-level processes, it is important to make a CM connection to group-level processes.

It was hypothesized that CM distinguishes between individual and collective domain-specific beliefs (Langfield-Smith, 1992) guiding at separate levels the thought processes and actions of individuals and groups. Langfield-Smith (1992) explained, "…in order for an organizational group to function, individuals must share a set of domain-specific beliefs, that is, a collective map" (p. 353). For Langfield-Smith (1992), "Collective cognitive structures include the systems of beliefs that provide a framework or reference for taking action and for interpreting experience" (p. 353). Neisser (1976) argued levels perceptual schema are embedded in a CM, "Units at different "levels" are not just related sequentially, the lower ones feeding information to others further along; instead they are embedded, each engaging in its own cyclic relationship with environmentally available information" (p. 124). With CM linked to individual- and group-level processes, it is important to make a CM connection to theory building processes. Eden (2004) puts forth, "…sometimes cognitive maps are known as 'cause maps', particularly when they are constructed by a group, and so cannot claim to be related to an individual's cognition" (p. 673).

Eden's (2004) research efforts in CM were centered in demonstrating, "how links between a theory of cognition and the mapping method might be understood in order to establish the status of one particular map in relation to others" (p. 262). Definitions of CM date back several decades, as well as (Eden, 1988; Golledge, 2005; Kitchin, 1994) their aim and utility as a method of data collection and data analysis. Implications for CM have included manager research (Fiol & Huff, 1992), data collection (Brown, 1992), analysis of maps (Eden, 2004; Eden, Ackermann, & Cropper, 1992), idiosyncratic schema mapping (Cossette & Audet, 1992), CM focusing on within group analysis (Langfield-Smith, 1992),

social construction (Bougon, 1992), as well as orienting schema as a synonym for CM (Neisser, 1976). This study will not provide a complete introduction to CM methods, but does present CM as a "qualitative research approach" (Jenkins, 1988, p. 241). Next we turn to Drazin, Glynn and Kazanjian (1999) to link CM to theory building, "The goal of theory building in the interpretive or sensemaking perspective is to describe organizational life. The focus is less on understanding how to manipulate a system (so as to increase the level of creativity) than it is on understanding the processes through which individuals and organizations develop systems of meaning about creative actions" (p. 292). With an introductory knowledge of CM, the next consideration is to link CM to the method.

Eden and Ackermann (1998) put forth, "Methods that may appear to be suitable for one area of cognitive comparison may be inappropriate for another and while some generic considerations may be tenable, an appreciation of the differences in domain and applicability is important" (p. 193). Therefore, Langfield-Smith's (1992) functional description of CM is needed for clarification,

> Cognitive maps provide graphical descriptions of the unique ways in which individuals view a particular domain (field of thought or action) (Axelrod, 1976; Bougon, 1983; Eden et al., 1983). The term 'cognitive map' has been used to describe several forms of diagrammatic representation of an individual's cognitions. 'Causal maps' are one such form, and these are essentially networks, consisting of elements and directional (cause and effect) relationship between those elements. Within a causal cognitive map the beliefs that an individual has concerning a domain can be modeled as causal relationships (p. 350).

Fahey and Narayanan (1989) in their study *Linking Changes in Revealed Causal Maps and Environmental Change: An Empirical Study* was insightful by "exploring cognitive maps of the dominant coalition of one firm over time". Scavarda et al., (2006) further defined causal map use in this way, "In the social sciences, a causal map is generally considered to be a particular type of cognitive map, which is an individual's mental model of the relationships (causal or otherwise) among the elements of a system" (p. 264). Additional framing of causal maps by Scavarda et al., (2006) included,

> Causal maps are an essential tool for managers who seek to improve complex systems in the areas of quality (Pande & Holpp, 2001; Evans, 2005), information systems (Nelson, Nadkarni, Narayanan, & Ghods, 2000), and strategy (Kaplan & Norton, 2004). These causal maps are know by many names, including Ishikawa (fishbone) diagrams (Enarsson, 1998), cause-and-effect diagrams (Evans, 2005), impact wheels (Sorach, 2006), issue trees (Universität St. Gallen, 2005), strategy assessment mapping tools (Hodgkinson, Tomes & Padmore, 1996, p. 264).

Table 28 below was constructed to represent how CM research is essentially a qualitative research approach (Jenkins, 1988) and its applicability to scenarios in general and SP in particular. The table represents CM as epistemological structures, basic elements of CM, the aim of CM, and the use of CM in scenario planning. Additional areas of interest regarding CM include: laws of interaction of the CM parts, CM as a mathematical model of a belief system, CM validity, and four requirements CM must satisfy when studying decisions.

Table 28 Cognitive Maps as an Interpretive Research Technique.	
Cognitive maps as epistemological structures	"A cognitive map consists of the concepts and the relations a participant uses to understand organizational situations" (Weick & Bougon, 1986, p. 106).
Personal construct theory	"The formal basis for cognitive maps derives from personal construct theory (Kelly, 1955) which proposes an understanding of how humans 'make sense of' their world by seeking to manage and control it" (Eden, 2004, p. 673).
Cognitive Map as a qualitative research approach	"Cognitive mapping is essentially a qualitative research approach. It is a way of eliciting meaning and promotes our understanding of how an individual makes sense of a situation" (Jenkins, 1988, p. 241).
Cognitive maps as interpretations	"Maps are not just a graphical description of what is said rather they are interpretations of what is meant by the interviewee" (Eden, 2004, p. 675).
Aim of cognitive maps	"…was to guide careful problem construction whereby each member of the team can gently "change their mind' and to so creatively" (Eden, 1988, pp. 7-8).
Future reference framework	"It is this aspect of future reference which makes causal frameworks of cognition particularly appropriate for representing strategy" (Jenkins, 1988, p. 234).
Cognitive map use in scenario planning	Commonly proposed processes for using scenarios begin with the main perceived driving forces for future change, move on to a critical development of cause—effect relationships, arriving at a description of future conditions, and leading to policy selection or strategy formulation—a process to which cognitive mapping is well—suited. (Warren ,1995, p. 12).
Methods for gathering cognitive maps	• Systematic coding of documents representing the writings or statements of an individual; • Coding of verbatim transcripts or private meetings in which the individual participates; and • Eliciting causality beliefs through questionnaires and interviews (Weick & Bougon, 1986, p. 113).
Basic elements of cognitive maps	The concepts a person uses are represented as *points*, and the causal link between these concepts are represented as *arrows* between these points. This gives a pictorial representation of the causal assertion of a person as a graph of points and arrows. (Axelrod, 1976, p. 5).
Derivation of cognitive maps studying decision making should satisfy four demanding requirements	• First, Methods should be unobtrusive; • Second, the derivation should not require advance specification of the concepts a particular decision maker may use in his cognitive map; • Third, the derived cognitive map should be closely tied to an evaluation theory of decision making, so it can be used to advise and even criticize the decision maker; • Fourth, the method for deriving the cognitive map should be valid, which is to say that the map should be an accurate representation of the assertions (and relationships among them) used by the decision maker. (Axelrod, 1976, p. 6).
Cognitive map validity	"This is mainly a question of getting the meaning right at the various levels of analysis. This depends on the target level of generality, i.e. how far we want to go from the natural original level" (Laukkanen, 1990, 207).

Cognitive Mapping Tables highlight how CM research affords theorist-researchers an opportunity to use foundational [Smith, 1993] and antifoundational [Smith, 1993] inquiry systems contributing to a theory of knowledge and theory of understanding, respectively. CM is a way of eliciting meaning and promotes our understanding of how individual's makes sense of a situation. CM research enables researchers to collect idiosyncratic and collective maps from individuals, work groups, and organizations. This is an important data collection area of interest, since SP is concerned with individual- and, work group-, and organizational-level's historicity, present condition, as well as futures realities. Jenkins' (1988) also believed, "It is this aspect of future reference which makes causal frameworks of cognition particularly appropriate for representing strategy" (p. 234). By integrating new and improved MLTB model describe earlier in this chapter with CM research to operationalize the empirical research component of the theory building model, theory building has been enhanced for this and future studies.

An Agenda for Testing Scenario Planning Theories-in-use

Criteria for judging interpretive SP inquiry is covered in this section of Chapter IV while criteria for judging the multilevel research model of SP theory will be discussed in Step Four of this chapter: Scenario Planning Theory Testing. Lincoln and Lynham (2011) previously asked, "Given the inadequacy of currently available criteria for assessing theory in applied disciplines from a conventional perspective, what would the criteria for assessing such theory be from an interpretive perspective" (p.4)? Lincoln and Lynham put forth a paradigmic standard by which theories should be measured against, "The final arbiter for criteria proposal is the model of inquiry itself, the paradigm" (p.18). Basic belief

(metaphysics) of alternate inquiry paradigms, cited in Chapter I specified philosophical hermeneutics as the theoretical paradigm perspective best aligned with the phenomenon of interest of this study. Therefore, antifoundational inquiry informs the framing of criteria to judge the quality of scenarios brought forward from Chapter III to work hand-in-hand with criteria for judging interpretive theory of SP in Table 29.

Table 29 Criteria for Judging an Interpretive Theory of Scenario Planning: Two Step Model.	
Criteria for Judging Scenarios	Plausibility, differentiation, consistency, decision-making utility, and challenges world views (Wilson, 1998).
Criteria for Judging Interpretive Inquiry in Applied Disciplines	Importance, Precision and Clarity, Parsimony and Simplicity, Comprehensiveness, Operationality, Empirical Validity or Verification, Fruitfulness, Practicality, Compellingness, Saturation, Prompt to Action and Fittingness (Lincoln & Lynham, 2011).

A review of several qualitative theoretical paradigm perspectives is undertaken as building blocks leading toward the selection of criteria for judging interpretive theory such as SP theory beginning with the philosophical hermeneutic perspective. Philosophical hermeneutic epistemology is neither objectivist nor subjectivist, but a mode of being in the world (Gadamer, 1965/1975). The method for data collection and data analysis is understood as being hermeneutical and dialectical in nature (Gadamer, 1965/1975). Therefore, criteria for judging interpretive SP theory in this qualitative research project is to be aligned with the interpretive inquiry paradigm. Lincoln and Lynham (2011) avered, "Each criterion [for judging quality] must not only exhibit fit with the metaphysical requirements of the alternative model of inquiry…, but those same axiomatic systems must suggest new criteria

when the conventional criteria appear to be incomplete, faulty, inoperative or unacceptable for purposes of the new paradigm's set…. " (p. 18).

Lincoln and Guba (2000) from a qualitative research perspective argued, "We do not believe that criteria for judging either 'reality' or 'validity' are absolutist, but rather are derived from community consensus regarding what is 'real,' what is useful, and what has meaning (especially meaning for action and further steps)" (p. 167). Criteria for judging SP theory reality or validity constructed from a philosophical hermeneutic perspective must attend to first-person researchers and multiple plausible realities or worldviews. Likewise from within the qualitative movement, Schwandt (2000) argued the philosophical hermeneutics project departed from positivism and postpositivism meaning, "…philosophical hermeneutics opposes a naïve realism or objectivism with respect to meaning and can be said to endorse the conclusion that there is never a final correct interpretation" (p. 195). Ontologically philosophical hermeneutic philosophy has been described as a mode of man's ontological being in the world seeking a self understanding (Gadamer, 1965/1975).
From a philosophical hermeneutic philosophy tradition, planning for a future state is the ontology of becoming. In applying this understanding Walton (2008) averred, "The very act of constructing a scenario about the future brings about its ontological status" (p. 156). Walton argued, "If we define knowledge conventionally as 'true justified belief,' in terms of the scenarios that are constructed we cannot demonstrate "true" in a way that is normally recognized" (p. 161). The underlying logic for this proposition is centered in conjectural knowledge (Bell, 2003) generated through futures orientated scenarios generating construct of plausible belief for individual and collectivities participating in SP inquiry. When

juxtaposing objective truth beliefs from a positivist paradigm against conjectural knowledge generated through scenario planning Walton posited, "The theoretical problems become apparent when we look at the positivist–postpositivist arena and establish that evaluation constructs such as validity, reliability, predictability, and generalizability are not really appropriate" (p. 162). Rejecting positivism/post-positivism projects is the logic for exploring and defining new criteria for judging quality in socio-cognitive developed theory such as SP theory.

Speaking from a philosophical hermeneutic perspective in "Being and Time" the hermeneutic circle is portrayed as thematic analysis by tacking between man's tradition and fusion of horizons (Heidegger, 1986). This understanding is observed in when SP inquirers are formed into ad hoc focus groups to generate first-person inductive to deductive theories-in-use resulting in contextual, local and negotiated meaning to inform organization strategic policy. The method of collecting and analysis of data by SP practitioners mirrors the hermeneutic circle thematic analysis by tacking between man's tradition and fusion of horizons. Since philosophical hermeneutics is viewed as a philosophy and not a research strategy this study embraced two qualitative research strategies in its theoretical model of SP: cognitive mapping of individuals and collectivities prior to entering the hermeneutic circle, as well as grounded theory method for thematic analysis. Since Lincoln and Lynham (2011) combined interpretive and social constructivist perspectives in their research, this study will follow their investigative trail.

From a social constructivist perspective Wright and Goodwin (1999) avered, "Scenario planning enables the construction of multiple frames of the future states of the

external world and allows the testing of strategic options against these frames" (p. 320). Wright and Goodwin posited, "…scenario planning contains a qualitative methodology for dealing with decision making under uncertainty that we advocate as an important precursor to quantitative decision analysis" (p. 319). SP does not require SP inquirers working in ad hoc working groups to achieve homogeneity or consensus, but prefers diversity of thought represented by ad hoc working group heterogeneity. It should be noted that Wright and Goodwin put forth, "Scenario planning enables the construction of multiple frames of the future states of the external world and allows the testing of strategic options against these frames" (p. 320), yet they were silent on criteria for judging the quality of SP theory. Lincoln and Lynham's (2011) approach to resolving criteria for judging interpretive theories in applied disciplines by extending Patterson's eight criteria for assessing theory by adding four additional quality criteria to his seminal work. Their work consisted of the following criteria: importance, precision and clarity, parsimony and simplicity, comprehensiveness, operationality, empirical validity or verification, fruitfulness, practicality, compellingness, saturation, prompt to action and fittingness (Lincoln & Lynham, 2011). Lincoln and Lynham's work is considered a significant contribution in an under researched theory building topic and considered applicable to this study. Thus, it is adopted by reference.

For the purpose of this study, a logically consistent, integrated, and iterative theory building methodology consists of three research components (theoretical paradigm, theoretical research, and empirical research) informing an interpretive, multilevel theory of scenario planning. Previously stated criteria for constructing and judging theory building methodology (Dubin, 1969/1978), MLTB principles (Kozlowski & Klein, 2000), and guidelines for

collective MLTB constructs (Morgeson & Hoffman, 1999) are working in tandem with criteria for judging scenarios (Wilson, 1998) and criteria for judging interpretive theories in applied disciplines (Lincoln & Lynham, 2011). In totality, they represent criteria compiled in this study for constructing and judging an interpretive, multilevel theory of SP.

Emergence of Individual and Collective Characteristics of Scenario Planning Theoretical Units

Two tables are referenced in the following pages. The first, Table 30, was constructed to represent how CM research is essentially a qualitative research approach (Jenkins, 1988) and its applicability to scenarios in general and SP in particular. Table 30 represents CM as epistemological structures, basic elements of CM, the aim of CM, and the use of CM in scenario planning. Additional areas of interest regarding CM include: laws of interaction of the CM parts, CM as a mathematical model of a belief system, CM validity, and four requirements CM must satisfy when studying decisions.

The second, Table 31, represents Causal Mapping Research, which is a particular type of cognitive map deigned to produce first-person idiosyncratic or collectivity causal (or otherwise) mental models. Table 31explicates level of analysis, form and structure of maps, test of propositions, as well as main methods for gathering cause maps.

Table 30 Cognitive Mapping Research Method.	
Two types of elements in a cognitive maps	• "Concepts are treated as variables; and • Causal beliefs are treated as relationships between the variables" (Axelrod, 1976, p. 58).
Social scientist techniques for studying assertions	• Survey research technique; • Content analysis technique; and • Open-ended probing interview (Axelrod, 1976, p. 7).
Two types of structural analysis of cognitive maps	• *Arithmetic methodologies* tend to be numerical and precise, and usually aim at the optimization of a few parameters involved in a cognitive map. They tend to be present-orientated and relatively insensitive to change or modification of the basic parameters making up the map; • *Geometric methodologies* tend to be rather nonnumerical, and they can take account of variables that are not readily quantifiable. Their aim is an analysis of structure and shape, and especially of changing patterns of structure that may have different ramifications for the future (Axelrod, 1976, p. 144).
Validity of cognitive mapping approach to decision making	"Since the term 'cognitive map' as used in this volume refers to a particular way of representing a person's assertions, a valid cognitive map does not necessarily have to be consistent with the person's private beliefs" (Axelrod, 1976, p. 6).
Cognitive mapping approach to decision making uses elements from at least four fields	• The idea that a mathematical system can be specifically designed to deal with a person's cognitive processes may be traced to Abelson and Rosenberg (1958), who call their system "psycho-logic"; • The idea that points can be regarded as variables, and that the arrows can be regarded as causal connection between points, comes from the statistical literature of causal inference, developed by Simon (1957), Blalock (1964), and others; • Graph theory provides concepts, such as paths, cycles, and components, that are helpful in the analysis of complex structures of interconnections…The resulting mathematical system is similar to the network system developed by Maruyama (1963) to analyze mutual causal relationships in the environment. • The idea that structural relationships between pairs of concepts can be systematically and reliably coded from a document was taken from evaluative assertion analysis of Osgood, Saporta, and Nunnally (1956).
Causal relationships	The cognitive mapping approach…uses only one basic type of relationship, namely, the causal relationship. While causation is represented as being either positive or negative (i.e., promoting or retarding effects), and while it can represent evaluative assertions as well as regular causal assertions, the causal relationship is still the basic building block of a cognitive map (Axelrod, 1976, pp. 10-11).
Cognitive mapping reliability	Because the cognitive mapping approach requires an accurate representation of the structural relationships among a set of assertions, the ability to achieve reliable measurement is vital…And if a single type of relationship is to be used, the causal relationship is a natural candidate, because it is central to the process of evaluating policy. (Axelrod, 1976, p. 11)

Table 30 Continued.	
Cognitive mapping data analysis	"There has been heavy reliance on qualitative content analysis in studies that focus on the *content* of belief systems" (Axelrod, 1976, p. 47).
Laws of interaction	The laws of interaction of the parts of cognitive maps are intended to be rational, so a cognitive map does, indeed, have a straightforward normative interpretation. The interpretation is simply that a person whose concepts and beliefs are accurately represented in a particular cognitive map should rationally make predictions, decisions, and explanations generated from the model. (Axelrod, 1976, p. 56).
Cognitive map as a mathematical model of a belief system	"A cognitive map is a particular kind of mathematical model of a person's belief system; in actual practice, cognitive maps are derived from assertions of beliefs" (Axelrod, 1976, p. 6).
Cognitive map (signed diagraph) feedback loops	"It is these loops that contribute so greatly to stability or instability, and knowing these loops can help us to understand the major forces for change present *within* the system" (Axelrod, 1976, p. 176).

Table 31 Cause Mapping Research	
Cause maps as epistemological structures	A cause map develops as the mind reflects on experience, constructs concepts in the form of variables, and imposes connections among these variables. When variables are connected, they become meaningful since meaning flows from relationships (Weick & Bougon, 1986, p. 107).
Causal map	"In the social sciences, a causal map is generally considered to be a particular type of cognitive map, which is an individual's mental model of the relationships (causal or otherwise) among the elements of a system" (Scavarda, et al., (2006, p. 264).
Level of analysis	"The level of analysis appropriate for a cause map is the individual" (Weick & Bougon, 1986, p. 125).
Cause maps as collective structures	Cause maps are relevant to groups as well as individuals. Three levels or agreement are required when people attempt to make sense of their joint experiences: • Agreement on which concepts capture and abstract their joint experience; • Consensus on relations among these concepts; and • Similarity of view on how these related concepts affect each party and on how they themselves can affect the concepts (Weick & Bougon, 1986, p. 109).
Three forms of collective cause maps	• *Assemblage cause map*: "Concerted action is possible where there is common relevance of two concepts in two cause maps and a double interact (Weick, 1979) to link the maps" (Weick & Bougon, 1986, p. 110). • *Composite cause map*: "…develop a common appreciation of a group situation by first having individuals describe their own idiosyncratic cause maps. Then individuals see both the cause maps constructed by others and a composite map that contains all the concepts and relations found in all the individuals' maps" (Weick & Bougon, 1986, p. 111); and • *Average map*: "…is an algebraic mean of the signed links [by the number of] participants" (Weick & Bougon, 1986, pp. 111-112).
Cause maps contain two basic components of cognitive complexity	• "*Integration* is measured by the number of connections among differentiating concepts" (Weick & Bougon, 1986, p. 120); • "*Differentiation*, the number of characteristics or dimensions of a problem that are included, is often fixed by the observer, but when it is not, complexity can be assessed" (Weick & Bougon, 1986, p. 120).
Test of propositions	"The amount of differentiation and integration in a cause map can be treated as a proxy for requisite variety, which would enable tests of the proposition that it takes variety to destroy variety" (Weick & Bougon, 1986, p. 129).
Main methods for gathering cause maps	• "Systematic coding of documents representing the writings or statements of an individual; • Coding of verbatim transcripts of private meetings in which the individual participates; and • Eliciting causality beliefs through questionnaires and interviews" (Weick & Bougon, 1986, p. 113).
Cause map begins	"A cause map starts where people actually are in their understanding of issues and preserves the natural language of their understanding" (Weick & Bougon, 1986, p. 124).

Table 31 Continued.	
Nodes are codes	"Researchers should remember that in any cause map "nodes are codes" (Weick & Bougon, 1986, p. 113).
Cause map as ideology	"A cause map is also an ideology (Beyer, 1981) and a basis for a presumption of logic (Weick, 1983)" (Weick & Bougon, 1986, p. 128).
Causal map results	"The resulting *cause maps* provide cognitive structures that are imposed on events to create meaning, which means that cause maps often *are*, in fact, the organization" (Weick & Bougon, 1986, p. 13).

Bernstein (1983) described the philosophical hermeneutic and SP by association an interpretive project, "In effect, I am suggesting that Gadamer is appealing to a concept of truth that (pragmatically speaking) amounts to what can be argumentatively validated by the community of interpreters who open themselves to what tradition, 'says to us'" (p. 154). Cognitive Mapping (CM) Tables highlighted how CM research affords theorist-researchers an opportunity to use foundational (Smith, 1993) and antifoundational (Smith, 1993) inquiry systems contributing to a theory of knowledge and theory of understanding, respectively. CM is a way of eliciting meaning and promotes our understanding of how individual's makes sense of a situation. CM research enables researchers to collect idiosyncratic and collective maps from individuals, work groups, and organizations. This is an important data collection area of interest, since SP is concerned with individual- and, work group-, and organizational-level's historicity, present condition, as well as futures realities. Jenkins' (1988) also believed, "It is this aspect of future reference which makes causal frameworks of cognition particularly appropriate for representing strategy" (p. 234). By integrating new and improved MLTB model describe earlier in this chapter with CM research to operationalize the empirical research component of the theory building model, theory building has been enhanced for this and future studies.

Unit 5—Strategic action

Strategic action is selected as a SP theoretical research unit, because it represents implementation action of organizational self's entrepreneurial competitive advantage theories-in-use. Strategic action (theoretical unit number 5) is an organizational behavior construct whereas experiential learning (theoretical unit number 4) is an individual and

collectivity cognitive construct. Strategic action builds on the experiential learning outcomes of SP inquirers (representing partial membership of an employing organization) incorporating new theories-in-use into the entire organizational memory through knowledge management (KM) activities in two areas: strategic policy and strategic action plans. Table 32 illustrates the use of KM activities to embed inferential knowledge acquired from SP inquiry to guide organizational behavior.

Table 32 Knowledge Management Activities Embed Theories-in-use into Organizational Self.	
Knowledge Management	Knowledge management has been defined as "the explicit control and management of knowledge within an organization aimed at achieving the company's objectives" (van der Spek & Spijkervet, 1997, p. 43).
Strategic Action Plan (or Business Idea for the Future)	Strategic Action Plan (SAP) is a cognitive framework used to communicate an organizations change management strategy. Key elements of the SAP include a mission statement, strategic vision, strategic intent and business unit-level strategic action plans.
Mission Statement	"Rationalist strategy making starts with the definition of a purpose of the organization. This is often called the 'mission'" (van der Heijden, 1996, p. 26). Mission is about [an enduring or timeless concept] culture *and* about strategy…it is an organization's character, identity and reason for existence….Mission provides the rationale for [organization] action (Campbell & Yeung, 1991, p. 145).
Strategic Vision	"[Macro-level worldview] capability options indicate potential development territory towards the Business Idea of the future (the Strategic Vision)" (van der Heijden, 1996, p. 144).
Strategic Intent	Strategic intent is a concept that draws from both vision and mission. It includes a desired future state, a goal defined in competitive terms that is more a part of vision than of purpose" (Campbell & Yeung, 1991, p. 146).
Business Unit Strategic Action Plans	A business unit functions within a social subperformance system (aligned with organizational theories-in-use) in strategic supply and demand transactional exchange relationships with other organizations functioning in its relevant action domain.

Definition

SP inquiry begins with an organization (or social subperformance system) engaged in on-going interactions within a relevant social performance system domain. Revisions to organization theories of action may result from SP inquiry (which is a social and cognitive process resulting in collective strategic sense making using causal inference logic and negotiated decision-making) if DDL occurs by SP participants when organizational self is juxtaposed to situations of action during organization learning activities. Knowledge management activities are then employed post-SP inquiry to attend to an organization's espoused theories by either establishing or updating corporate-level strategic policy and multilevel business unit strategic action plans.

Description

In accordance with Parsons' (1951) theory of social action, SP theoretical units titled "scenarios and experiential learning" orientated the actor (organizational self) to future situations of action. After organizational self theories-in-use are developed during SP inquiry, the entrepreneurial systems of distinctive competencies (van der Heijden, 1996) are encoded into routines that guide organizational behavior (Argyris & Schön, 1978; Levitt & March, 1988; van der Heijden, 1996). During the encoding process, SP theorists-researchers need not view organizational self as a unitary actor (Parsons, 1951; van Der Heijden, 1996). Organizational self needs to be comprehended not only as an action orientated social subperformance, but as a point of reference interacting in a larger relational social performance system. Conceptualizing organizations as social subperformance systems functioning in a larger social performance system orientates the theorist-researcher to focus

on an organizational behavior in relationship to the relevant structure and context of an organization's future action situations. In addition to understanding organizations as social subperformance systems, the theorist-researcher needs to factor in the theory building philosophy informing SP theory.

From a philosophical hermeneutic philosophy (Gadamer, 1975) perspective, an organization's "there-being" is a mode of being in the world to develop an interpretive, understanding of self in relationship to man's text (Heidegger, 1986). Scenario based strategy making underpinned by a philosophical hermeneutic philosophy is different from traditional rationalistic strategy making noted in the positivist tradition where only one reality or truth exist. In the positivist project there is an assumption of only one ultimate reality. Therefore, decision-making strives to get as close as possible to this one right answer. Under the philosophical hermeneutic project there is not a single ultimate truth, but multiple plausible realities exist.

Strategic action is principally a strategy to integrate an organizational theories-in-use and communicated in a Strategic Action Plan (SAP). SAP policies are worldview perceptions shared within an organizational culture for the purpose of signaling a change in business practices. SAP is concerned with developing strategic policy at the corporate-level of a formal organization with its top-down influence informing business unit strategic action plans. Strategic action is organizational self projecting corporate-level strategy, programming, budgeting, and resource allocations into action plans across and between business unit-levels. Key concepts of a SAP framework (or Business idea for the future)

consist of corporate-level policy communicated in a mission statement, strategic vision, strategic intent and multilevel business unit action planning.

Strategic policy and unit-level strategic action plans function to operationalize missions by integrating organizational behavior. Specification of a mission statement establishes the enduring rationale for organization action (Campbell & Yeung, 1991). While a subset of strategy is strategic vision. Van der Heijden (1996) observed that Wack introduced the notion of strategic vision, "He saw Strategic Vision as the 'counterpart of scenarios' for coping with the turbulence and uncertainty, a 'complexity reducer', a common frame of reference with which information can be organized" (p. xi). Strategic vision can be understood as a perception device promoting development of normative business unit-level strategy vectors (or courses of action) for an organization to transform toward in meeting strategic policy guidance.

The term "strategic intent" is a concept that conveys temporary strategy leading toward a desired future state of an organization. Strategic intent is not an enduring term like a mission statement that defines an organizations purpose for existing. Strategic intent is a cognitive device used to communicate a general direction of travel in time toward a desired future state synchronized with an organization's mission. Campbell and Yeung (1991) posited, "Strategic intent is, therefore, closest in concept to the traditional definition of mission: 'what business are we in and what strategic position do we seek?'"(p. 146). Strategic intent is a temporary driving force for organization action.

Classification of the unit

Strategic action properties of SP theory necessitate a bias toward organization goals that are congruent with organization self. Regarding general scientific distinctions of units, strategic action is classified as enumerative, attribute, collective, member, and sophisticated unit. Strategic action has an enumerative property, in that; it holds constant in all conditions of SP phenomena. Dubin (1969/1978) averred, "The only condition that needs to be met is that the indicator never produce[s] a zero value" (p. 187). An attribute is the property of a thing being present where as a variable is only present in degrees (Dubin, 1969/1978). Strategic action is present in the phenomena of SP and essential to action planning. Strategic action has the quality of being both a member and collective unit, in that, multilevel strategic action plans are implemented by individuals and collectivities. Strategic action is well defined and considered a sophisticated unit.

The strategic action construct is predicted to originate at the corporate-level at the point in time that a social subperformance system is forming or adjourning (Tuckman & Jensen, 1977) with top-down contextual influences throughout the organization based on an assumption of shared collective construct properties and compositional processes (Kozlowski & Klein, 2000). However, during other organization life cycle stages emergence is predicted to possess configural properties and emerge bottom-up through compilation processes (Kozlowski & Klein, 2000). It should also be noted that during SP inquiry which is itself an entrainment processes, emergence is predicted to originate through omni directional contributions of SP participants based on an assumption of configural properties and discontinuity processes (Kozlowski & Klein, 2000).

Table 33 is a matrix illustrating theoretical unit types and theoretical unit relationships.

Table 33 Theoretical Unit Types and Theoretical Unit Relationship Matrix: Theoretical Units of Scenario Planning plotted within the Matrix.

Theoretical Unit Types	Theoretical Unit Relationships				
	Enumerative	Associative	Relational	Statistical	Summative
Attribute	Organizational Self; Situation of Action; Scenarios; Experiential Learning; Strategic Action				
Variable					
Real	Organizational Self; Situation of Action; Scenarios; Experiential Learning; Strategic Action				
Nominal					
Sophisticated	Organizational Self; Situation of Action; Scenarios; Experiential Learning; Strategic Action				
Collective	Organizational Self; Situation of Action; Scenarios; Experiential Learning; Strategic Action				
Member	Organizational Self; Situation of Action; Scenarios; Experiential Learning; Strategic Action				

Source: Chermack, 2003b, p. 206.

The prevailing logic used in selecting SP theoretical research units is grounded in a philosophical hermeneutic theory building philosophy as an antifoundational form of inquiry (Smith, 1993) and Parsons (1951) theory of social action. It should also be noted that enumerative unit are favored in this theory building study, due to its universal dimension and

are called for in the initial distinction of unit characteristics. For the purpose of this study, statistical unit designation serve a secondary function following first-person data collection with cognitive and causal maps, influence charts, grids, etc. The proposed SP theoretical units or collective constructs of:

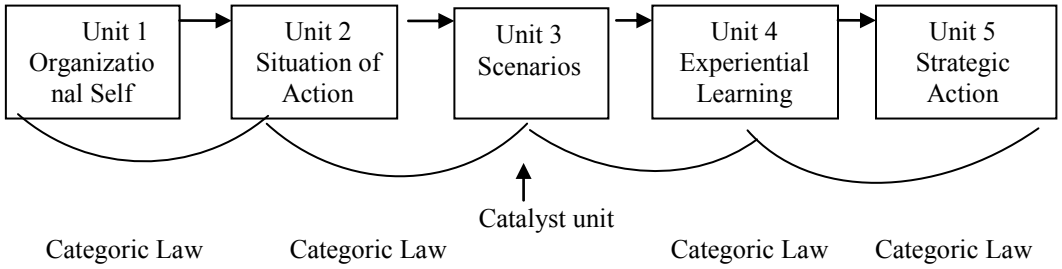
- Unit 1, Organizational Self;
- Unit 2, Situation of Action;
- Units 3, Scenarios;
- Unit 4, Experiential Learning; and
- Unit 5, Strategic Action

The SP theoretical research model was defined and classified adhering to single-level unit criteria established by Dubin (1969/1978) and emergent properties of collective constructs established by Klein and Kozlowski (2000a) and Morgeson and Hofman (1999).

Step Two— Scenario Planning Theoretical Research Model Categoric Laws of Interaction

It is important to note, "*The law of interaction itself is never measured*" (Dubin, 1969/1978, p. 94). Specifying the systematic linkage between the theoretical research model units addresses the problem of defining interactions among the units. Accounting for variances between theoretical units is necessary prior to defining SP theory boundaries. The scientific value of laws of interaction is a statement of relationship where the subject (unit) is linked to an object (unit) in the sentence (Dubin, 1969/1978). Figure 5 illustrates laws of interaction in the proposed theoretical model of scenario planning.

Figure 5 Laws of Interaction: Theoretical Research Model of Scenario Planning Theory.



Source: Chermack, 2003b, p. 206.

Categoric Laws of SP Theoretical Research Model:

- Law #1—All theoretical research units are required for SP theory to function.
- Law #2—Organizational self is associated with the situation of action.
- Law #3—Situation of action is associated with scenarios.
- Law #4—Scenarios are associated with experiential learning.
- Law #5— Experiential learning is associated with strategic action.

Sequential Laws of SP Theoretical Research Model.

- Law #1—Organizational self precedes the situation of action.
- Law #2—Situation of action precedes scenarios.
- Law #3—Scenarios precede experiential learning.
- Law #4— Experiential learning precedes strategic action.

A categoric law of interaction is the presence or absence of values between units (Dubin, 1969/1978). Dubin (1969/1978) estimated, "…three-quarters of all laws of interaction in the literature of the social and behavioral sciences are expressed as categoric laws of interaction" (p. 98). Categoric laws are symmetrical and are not ordered in a sequential manner. Common phrasing of categoric laws of interaction is as follows: There is a greater-than-chance (or less-than-chance) probability that unit A is associated with unit B. If a nonzero value can be associated with the relationship between two units of analysis, then it takes four laws of interaction to complete the specification process. If this condition is not

the case, then only one statement is required to define a categoric law of interaction. Categoric laws of interaction for SP theoretical research model are as follows:

- All units are required for the SP theoretical research model to function.
- There is a greater-than-chance probability that organizational self is associated with situation of action.
- There is a greater-than-chance probability that situation of action is associated with scenarios.
- There is a greater-than-chance probability that scenarios are associated with experiential learning.
- There is a greater-than-chance probability that experiential learning is associated with organizational strategic action.

Scenario Planning Theoretical Research Model Sequential Laws of Interaction

A sequential law of interaction is one always employing a time dimension (Dubin, 1969/1978). Establishing a time dimension is another scientific tactic for bringing order to a phenomenon of interest. Once again the focus of attention is on the theoretical unit and its relationship to other theoretical units in the theoretical research model. Therefore, the temporal sequential law of interaction in the SP theoretical research model is as follows:

- Organizational self parallel or precedes situation of action.
- Situation of action precedes scenarios.
- Scenarios precede experiential learning.
- Experiential learning precedes strategic action.

The sequential ordering of unit values employed is the only meaning we can attach to the law of interaction. When sequential law of order measurements are taken during empirical research meaning theory testing the theorist-researcher looks for the appearance of time differentials appearing in the values of linked units of the model.

Scenario Planning Theoretical Research Model Determinant Interactions

"The essential [determinant law] feature is that the values are paired, with each value for the first unit having a mating value on the second unit (or other units), and that these associated values on the units are invariantly linked" (Dubin, 1969/1978, 107). There is inadequate empirical research on SP as a phenomenon of interest to identify determinant laws of interaction. For the purpose of this study, the proposed theoretical research model of SP does not include any determinant interactions.

Scenario Planning Theoretical Research Model Laws of Efficiency and Assessment

By efficiency of a law Dubin (1969/1978) meant, "…the range of variability in the values of one unit when they are related by a law to the values of another unit" (p. 109). The scenario planning theoretical research model contains one law of efficiency: Directionality. The efficiency of SP laws need to be evaluated during the empirical research component of this study, as well as follow on studies to differentiate between four levels of efficiency: presence-absence, directionality, covariation, and rate of change. It is assumed that a directional law of efficiency is the dominant law at work in the proposed SP theory. However, testing of the theoretical research model will inform law of efficiency at work in the proposed SP theory. In addition to discerning the types of efficiency of law during empirical research, it will be possible to address criteria for evaluating the laws. Dubin

argued, “Parsimony in the number of laws of a theoretical model is determined by the *minimum* number of laws necessary to relate all the units of the system” (p. 113). A rank ordering system regarding laws of efficiency informed us that determinate laws are more efficient than categoric laws. Should empirical research reveal determinant laws are at work in SP theory, then parsimony meaning the minimum number of laws necessary to relate all units of a theoretical research model into a system could be confirmed/denied.

Step Three: Scenario Planning Theoretical Research Model Boundaries

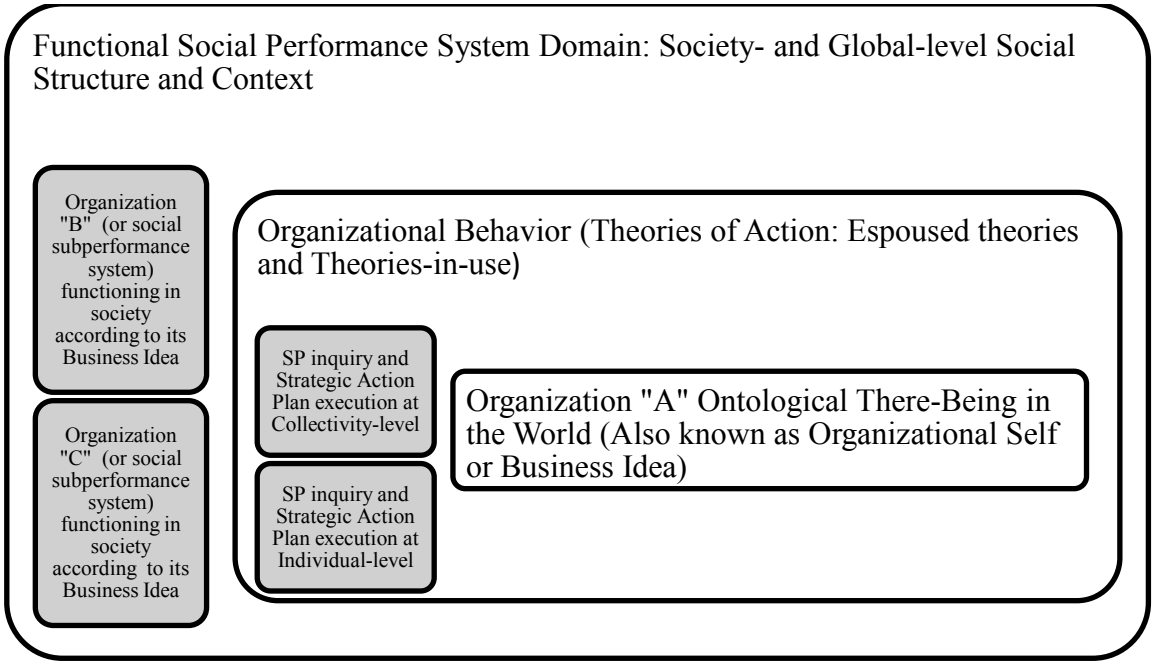
In theory building a scientist has two boundary-determining criteria courses: a logical test, like a syllogism, or an empirical test (Dubin, 1969/1978). In the absence of theoretical unit limiting values Dubin (1969/1978) put forth, “When the theoretical model is constructed in the absence of any prior empirical knowledge, the boundaries of the model are determined logically” (p. 141). Specifically, boundary criteria are derived from the same phenomena where theoretical units and laws are employed in the model (Dubin, 1969/1978). A syllogism can be used to illustrate employed theoretical units and laws of interaction satisfy the same boundary-determining criterion.

Empirical evidence is not available at this point in SP theory construction. The boundaries of the SP theoretical research model were imposed through the use of categorical syllogism as a deductive logic test. The syllogism boundary-determining criterion is:

- Major premise: All organizations are social and cognitive constructs.
- Minor premise: All “there-being” theories-in-use are organizational behavior.
- Conclusion: All “there-being” theories-in-use are social and cognitive constructs.

It is recognized that if the theoretical and empirical domain are identical, then the model remains unaltered and subject to additional empirical test (Dubin, 1969/1978). If, however, the domains are not identical, a modification of the model is immediately called for (Dubin, 1969/1978). Scenario planning theoretical research model boundaries are illustrated in Figure 6.

Figure 6 Scenario Planning Theoretical Research Model Boundaries.



Step Four: Scenario Planning Theoretical Research Model System States

System states represent the conditions in which a model of SP theory is operative. Dubin (1969/1978) defined system states in this way, “We think of a system state as a condition of the system being modeled in which the units of that system take on characteristic values that have a persistence through time, regardless of the length of time

internal" (p. 9). Since SP theory is concerned with organizations as social subperformance system, the notion of system states cannot be over emphasized. System state focus of attention has to encompass a "description of the system as a whole" (Dubin, 1969/1978, p. 149). In a social system of action, organizations have previously been classified (Parsons, 1951) as social subperformance system or point of reference and therefore cannot constitute the whole social performance system structure. Therefore, considering organizational self as a unitary actor would be a system state misspecification error. After developing an understanding of what a SP theory system state is not, it is time to turn our attention to SP theory system states.

Up to this point in the study, the theoretical research model has been composed of theoretical units interacting by specified laws within defined scientific model boundaries. An additional theoretical research model building block, namely, *system state*, is necessary, since not all regions of the scientific model are homogeneous with each other (Dubin, 1969/1978). Dubin specified the state of a system as possessing, "…three distinct features: (1) all units of the system have characteristic values, (2) the characteristic values of all units are determinant, and (3) this constellation of unit values persists through time" (p. 144). Open systems such as SP theory may evolve through more than one system state. Therefore, in order to understand the state of the system, each determinant value must be defined. In those instances where a determinant value is not defined, it is assumed the system is in a transition between states. According to Dubin (1969/1978), "When all units of the system have characteristic and determinant values, and when these constellations of values persist through

some time interval, we can designate this a *system state*" (p. 145). Table 34 is a simple representation of a format for indicating system systems.

Table 34 Format for Indicating System States.	
A system characterized by a categoric law of interaction	"If…, then… under conditions of…." (Dubin, 1969/1978, p. 152).
A system characterized by a determinant law of interaction	"A change in value of *A* (in a given direction; by a given amount; in and by both) is accomplished by a change of value of *B* (in a given direction; by a given amount; in and by both) under conditions…." (Dubin, 1969/1978, p. 153).
A system characterized by a sequential law of interaction	"A change in the value of *A* (in a given direction; by a given amount; in and by both) if followed in time by a change in the value of *B* (in a given direction; by a given amount; in and by both)" (Dubin, 1969/1978, p. 153).

Scenario planning theory is conceptualized as a theoretical research model transitioning through six system states:

- System State One—Non-operation
- System State Two—Organizational Self
- System State Three—Situation of Action
- System State Four—Scenarios
- System State Five—Experiential Learning
- System State Six—Strategic Action

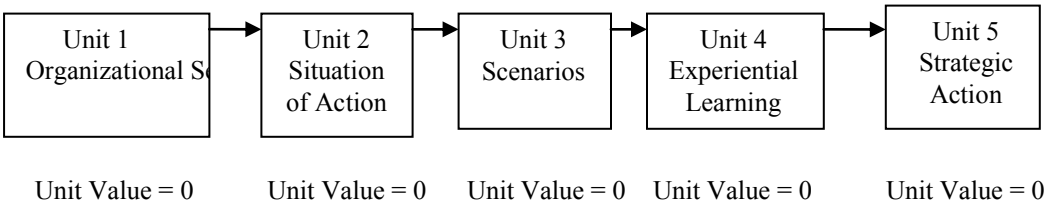
In order to differentiate between states of SP Theory, the binary notation to the base 2, in which "on/off" will be borrowed from the deductive logic system of Boolean Algebra where *0* represents an off-state (or absent condition state) and *1* represents the on-state (or present condition state).

System state one – Non-operation

In system state one all determinant value are defined as zero. The non-operation state remains zero until an organization develops a self understanding of itself (or Business Idea) in relationship to its situation of action. Organizational self will contain its espoused theories once the binary state changes to one. The system state of one persists until such time as the organization ceases to exist. At that time, the organizational state would be would revert back to zero. At the point in time that organizational self has a system state of one, all of the other theoretical units of SP theory are set at zero. Scenario planning cannot occur in the absence of an organizational self. Figure 7 is a diagram representing a system state on non-operation of SP theory as the starting point to theory construction. SP theory system state one can be defined with scientific model building block logic using the following statement:

If all unit values in a theory of scenario planning are equal to zero, then the theory is in a state of non-operation under the condition that organizational self does not exist.

Figure 7 System State One of Scenario Planning Theory – Non-Operation.



Source: Chermack, 2003b, p. 206.

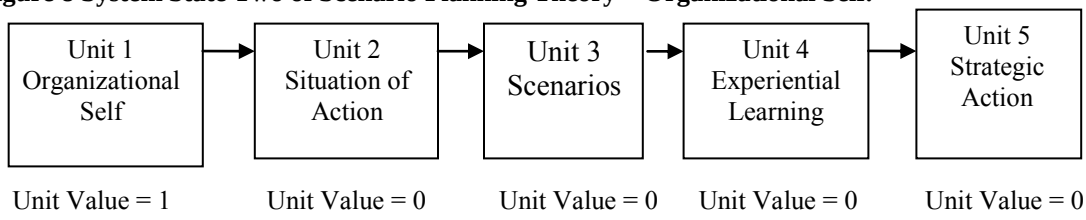
The SP theory theoretical research model conditioned on having an established organizational self, since SP theory is first and foremost a theory of social action (Parsons, 1951) where an actor (individual or collective) is orientated to its action situation.

System state two – Organizational self

The non-operation state of zero remains until an organization develops a self understanding of itself within a contextual business environment relationship. Organizational self must minimally contain its espoused theories of action for the binary state to change to one. The system state of one persists until such time as organizational behavior ceases to exist. At that time the organizational state would revert back to zero. In a social theory of action, organizational self (actor) is an essential SP theory component. Figure 8 is a diagram representing SP theory system state titled, "Organizational Self". SP theory system state one can be defined using hypothetical-deductive model logic with the following statement:

If organizational self occurs in SP theory, then, the value of the unit (organizational self) transitions from 0 to 1 under the conditions that an organizational identity (espoused theories of action) exist to influence organization behavior.

Figure 8 System State Two of Scenario Planning Theory – Organizational Self.



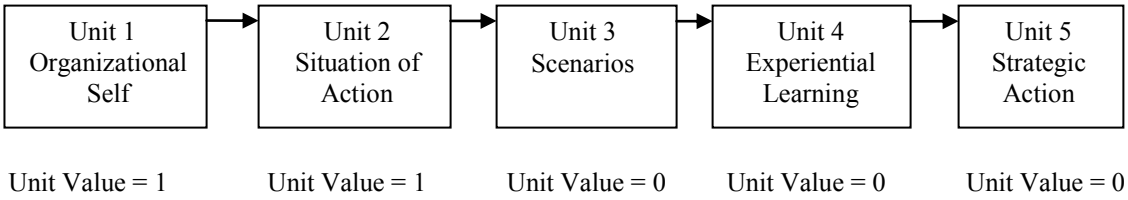
Source: Chermack, 2003b, p. 206.

System state three – Situation of action

Figure 9 is a diagram representing SP theory system state titled, "Situation of Action" indicating objects of orientation which means something to the actor whose behavior is being analyzed. Specifically, it is that part to which the actor is orientated and in which the actor acts. SP theory system state one can be defined using hypothetical-deductive model logic with the following statement:

If a situation of action is used in SP theory, the value of the unit (situation of action) transitions from 0 to 1 under the conditions that Organizational Self is orientated towards its social performance system domain.

Figure 9 System State Three of Scenario Planning Theory – Action Situation.



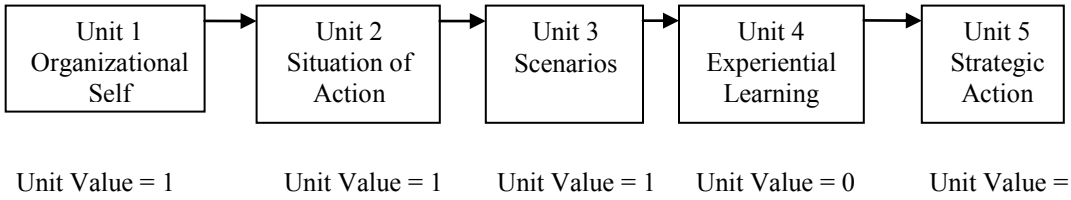
Source: Chermack, 2003b, p. 206.

System state four – Scenarios

SP theory system state four introduces scenarios as a contextual perception device (van der Heijden, 1996) into the theoretical research model. Arrays of equally plausible future orientated scenarios contribute to SP participant's (individual and collectivity) expansive causality (not probabilistic) thinking processes as hypothesis or provisional conjecture to guide investigation during SP inquiry where world view tacit assumptions are challenged during collective experiential learning activities. Once arrays of scenarios are constructed the system state converts from zero to one indicating the catalyst unit is present. Figure 10 is a diagram representing SP theory system state titled, "Scenarios". System state four can be defined using hypothetical-deductive model logic with the following statement:

If scenarios are used in SP theory, then the value of unit (scenarios) transitions from 0 to 1 under the conditions that scenarios have been constructed as perception devices to bridge between the existing worldviews and new alternative worldview action situations.

Figure 10 System State Four of Scenario Planning Theory – Scenarios.



Source: Chermack, 2003b, p. 206.

It is precisely because the future is not predictable that scenarios are constructed. Scenarios are a compensatory measure to deal with the problem of uncertainty. If the future were predictable, then its probability would equal 1. Rendering scenarios as multiple plausible futures as useless and represented with a probability of zero.

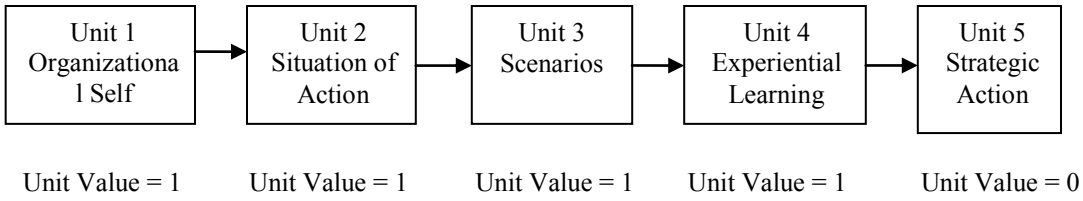
System state five – Experiential learning

Experiential learning using sets of scenarios serve as a counter balance to organizational self's espoused theories of action which can lock an organizations culture into courses of action. Experiential learning contributes to an inquirer's interpretive framework of organizational self. From a philosophical hermeneutic philosophy, Bernstein (1983) described inquiry as a hermeneutic circle process, "The circle of understanding is 'object' orientated, in the sense that it directs us to the texts, institutions, practices, or forms of life that we are seeking to understand. It directs us to the sensitive dialectical play between part and whole in the circle of understanding" (p 135). Experiential learning is an organizational learning activity concerned with managing individual and collectivity sense making and decision-making.

Experiential learning is a form of reductionist thinking where SP participants analyze organizational self against equally plausible future realities and deciding if current strategies are robust enough for multiple plausible futures. Figure 11 is a diagram representing SP theory system state titled, "Experiential Learning". System state five can be defined using hypothetical-deductive model logic with the following statement:

If experiential learning is used in the planning system, then the value of unit (experiential learning) transitions from 0 to 1 under the conditions that hermeneutic appropriation has occurred by SP participants in strategic conversation with fusion of horizons.

Figure 11 System State Five of Scenario Planning Theory – Experiential Learning.



Source: Chermack, 2003b, p. 206.

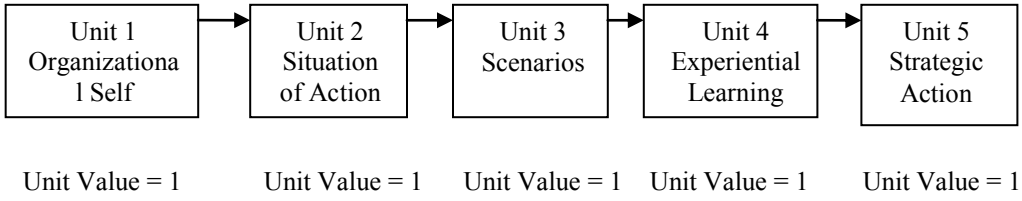
System state six – Strategic action

Strategic action is an organizational behavior construct representing implementation actions of organizational self's entrepreneurial competitive advantage theories-in-use. Strategic action may be viewed as knowledge management activities embedding inferential knowledge acquired from SP inquiry (individual and collectivity cognitive processes) to guide organizational behavior. Figure 12 is a diagram illustrating SP theory system state

titled, “Strategic Action”. System state six can be defined using hypothetical-deductive model logic with the following statement:

If strategic action is used in the planning system, then the value of unit (strategic action) transitions from 0 to 1 under the conditions that corporate-level strategic policy has been communicated to organizational membership informing multilevel business unit strategic action plans.

Figure 12 System State Six of Scenario Planning Theory – Strategic Action.



Source: Chermack, 2003b, p. 206.

When the SP theoretical research model has reached a condition where all system states have toggled from zero to one, the deliberate planning entrainment cycle has been completed. Scenario planning practitioners can utilize SP inquiry whenever an organization’s membership detects changes in its internal or external structural or contextual domain of action and espoused theories need to be juxtaposed against situations of action as a change management strategy. SP theory building has been presented as a complete theoretical research model based on an integrated philosophical hermeneutic philosophy.

Assessing the Theoretical Research Model System States

It should be explicitly communicated and understood that SP theoretical research model system states are being assessed in this section of Chapter IV and not specific contextual outcomes of the phenomenon of interest. Contextual outcomes of SP phenomenon are assessed by SP participants as outcomes of theoretical units within their social performance system domain. By satisfying three criteria of system states (inclusiveness, individual units have determinant values in a given state, and system states persist through some period of time), SP theory as a whole has been described. The interactions between the theory building philosophy and theoretical research model allowed for the synthesis of an interpretive multilevel theory of scenario planning.

Scenario Planning Theoretical Research Model Summary

Completing the first four steps of Dubin's (1968/1978) comprehensive eight-step hypothetical-deductive, theory-then-research model of theory building for applied disciplines specified an applied theoretical research model of scenario planning. Chapter IV specified the theoretical units/constructs, laws of interaction, boundaries, and system states of a theory of scenario planning. This model is believed to be the first of a kind, in that, a theory building philosophy component was added to Dubin's (1969/1978) applied theory building model that consisted of two components: theoretical research model meaning theory building and empirical research meaning theory testing. This interpretive, multilevel theory of SP is juxtaposed to Chermack's (2003b, 2004b) single-level, postpositivist theory of scenario planning contributing to Human Resource Development theory building.

To briefly summarize the model, theory construction steps will be highlighted:

The **units/collective constructs** of a theoretical research model of scenario planning are:

- Organizational Self;
- Situations of Action;
- Scenarios;
- Experiential Learning;
- Strategic Action

The **laws of interaction** of a theoretical research model of scenario planning are:

- All units are required for the SP theoretical research model to function.
- There is a greater-than-chance probability that organizational self is associated with situation of action.
- There is a greater-than-chance probability that situation of action is associated with scenarios.
- There is a greater-than-chance probability that scenarios are associated with experiential learning.
- There is a greater-than-chance probability that experiential learning is associated with organizational strategic action.

The **sequential laws** of a theoretical research model of scenario planning are:

- Organizational self precedes the situation of action.
- Situation of action precedes scenarios.
- Scenarios precede experiential learning.
- Experiential learning precedes strategic action.

The syllogism **boundary**-determining criteria of a theoretical research model of scenario planning are:

- Major premise: All organizations are social and cognitive constructs.
- Minor premise: All "there-being" theories-in-use are organizational behavior.
- Conclusion: All "there-being" theories-in-use are social and cognitive constructs.

The **system states** of a theoretical research model of scenario planning are:

- System State One—Non-operation
- System State Two—Organizational Self
- System State Three—Situation of Action
- System State Four—Scenarios
- System State Five—Experiential Learning
- System State Six—Strategic Action

An Agenda for Testing Scenario Planning Theories-in-use

Criteria for judging interpretive SP inquiry is covered in this section of Chapter IV while criteria for judging the multilevel research model of SP theory will be discussed in Step Four of this chapter: Scenario Planning Theory Testing. Lincoln and Lynham (2011) previously asked, "Given the inadequacy of currently available criteria for assessing theory in applied disciplines from a conventional perspective, what would the criteria for assessing such theory be from an interpretive perspective" (p.4). Lincoln and Lynham put forth a paradigmic standard by which theories should be measured against, "The final arbiter for criteria proposal is the model of inquiry itself, the paradigm" (p.18). Basic belief (metaphysics) of alternate inquiry paradigm, cited in Table 4 specified philosophical

hermeneutics as the education philosophy best aligned with the phenomenon of interest of this study. Therefore, an antifoundational inquiry paradigm is represented in Table 35 to inform framing criteria to judge the quality of SP theory grounded in a philosophical hermeneutics philosophy.

Table 35 Framing Criteria for Judging an Interpretive Theory of Scenario Planning.	
Research Philosophy	Philosophical Hermeneutics
Qualitative Research Project	Interpretive [Chosen for the purposes of this project, to paradigmatically equate social constructivist and interpretive inquiry]
Research Strategies	Hermeneutical and Dialectical; Cognitive mapping; and Grounded Theory
Methods of Collection and Analysis of Empirical Material	Interviewing, Cognitive Mapping, and Ad hoc Focus Groups
Criteria for Judging Interpretive/Social Constructivist Inquiry	Importance, Precision and Clarity, Parsimony and Simplicity, Comprehensiveness, Operationality, Empirical Validity or Verification, Fruitfulness, Practicality, Compellingness, Saturation, Prompt to Action and Fittingness (Lincoln & Lynham, 2011). [Chosen for the purposes of this project, to paradigmatically equate social constructivist and interpretive inquiry].
Criteria for Judging Scenario Planning Truth Claims Evaluated from Critical Realist Perspective	Plausibility, differentiation, consistency, decision-making utility, and challenges world views (Wilson, 1998).

For the purpose of this study, a logically consistent, integrated, and iterative three research components (research philosophy, theoretical research, and empirical research) theory building model ensures an interpretive, multilevel theory of scenario planning study. Criteria for judging theories in applied fields (Dubin, 1969/1978; Patterson, 1983), interpretive theories (Lincoln & Lincoln, 2011) and scenario planning from a critical realist perspective (Wilson, 1998) have been identified and put to work in framing for criteria for judging scenario construction.

Lincoln and Guba (2000) from a qualitative research perspective argued, "We do not believe that criteria for judging either 'reality' or 'validity' are absolutist, but rather are derived from community consensus regarding what is 'real,' what is useful, and what has meaning (especially meaning for action and further steps)" (p. 167). Criteria for judging SP theory reality or validity needs to attend first-person researchers and multiple plausible realities or worldviews. From within the qualitative movement, Schwandt (2000) argued the philosophical hermeneutics project departed from positivism and postpositivism meaning, "…philosophical hermeneutics opposes a naïve realism or objectivism with respect to meaning and can be said to endorse the conclusion that there is never a final correct interpretation" (p. 195). Ontologically philosophical hermeneutic philosophy has been described as a mode of man's ontological being in the world seeking a self understanding (Gadamer, 1965/1975). Philosophical hermeneutic epistemology is neither objectivist nor subjectivist, but a mode of being in the world (Gadamer, 1965/1975). The method for data collection and data analysis is understood as being hermeneutical and dialectical in nature (Gadamer, 1965/1975). Therefore, criteria for judging interpretive SP theory (phenomenon of interest) found in this qualitative research project should align with the interpretive inquiry paradigm. Lincoln and Lynham (2011) argued, "Each criterion [for judging quality] must not only exhibit fit with the metaphysical requirements of the alternative model of inquiry…, but those same axiomatic systems must suggest new criteria when the conventional criteria appear to be incomplete, faulty, inoperative or unacceptable for purposes of the new paradigm's set…. "(p. 18).

From a philosophical hermeneutic philosophy tradition, planning for a future state is the ontology of becoming. In applying this understanding Walton (2008) averred, "The very act of constructing a scenario about the future brings about its ontological status" (p. 156). Walton argued, "If we define knowledge conventionally as 'true justified belief,' in terms of the scenarios that are constructed we cannot demonstrate "true" in a way that is normally recognized" (p. 161). The underlying logic for this proposition is centered in conjectural knowledge (Bell, 2003) generated through futures orientated scenario planning which leads to a construct of plausible belief. When juxtaposing objective truth beliefs from a positivist paradigm against conjectural knowledge generated through scenario planning Walton posited, "The theoretical problems become apparent when we look at the positivist–postpositivist arena and establish that evaluation constructs such as validity, reliability, predictability, and generalizability are not really appropriate" (p. 162). Rejecting positivism/post-positivism projects is the logic for exploring and defining criteria for judging quality of socio-cognitive developed theory such as SP theory.

Speaking from a philosophical research perspective about philosophical hermeneutic in "Being and Time" the hermeneutic circle is portrayed as thematic analysis by tacking between man's tradition and fusion of horizons (Heidegger, 1986). During SP practice, SP participants are formed into ad hoc focus groups to generate first-person inductive to deductive theories-in-use resulting in contextual, local and negotiated meaning to inform organization strategic policy. The method of collecting and analysis of data by SP practitioners mirrors the hermeneutic circle thematic analysis by tacking between man's tradition and fusion of horizons. Since philosophical hermeneutics is viewed as a philosophy and not a research

strategy this study embraced two qualitative research strategies in its theoretical model of SP: cognitive mapping of individuals and collectivities prior to entering the hermeneutic circle, as well as grounded theory method for thematic analysis.

From a social constructivist perspective Wright and Goodwin (1999) averred, "Scenario planning enables the construction of multiple frames of the future states of the external world and allows the testing of strategic options against these frames" (p. 320). Wright and Goodwin posited, "…scenario planning contains a qualitative methodology for dealing with decision making under uncertainty that we advocate as an important precursor to quantitative decision analysis" (p. 319). While Wright and Goodwin put forth, "Scenario planning enables the construction of multiple frames of the future states of the external world and allows the testing of strategic options against these frames", they are silent on criteria for judging the quality of SP theory (p. 320). Lincoln and Lynham's (2011) research extended Patterson's eight criteria for assessing theory in applied fields by adding four additional quality criteria to this seminal work. Their work included with the following criteria for judging interpretive quality: importance, precision and clarity, parsimony and simplicity, comprehensiveness, operationality, empirical validity or verification, fruitfulness, practicality, compellingness, saturation, prompt to action and fittingness (Lincoln & Lynham, 2011). While Lincoln and Lynham's work is considered a contribution in evaluating practice-to-theory interpretive theory in applied disciplines, it does not align with the theory-to-practice approach used in this study.

Since philosophical hermeneutics, an antifoundational (Smith, 1993), theory building philosophy guides this study, space is created in this study for additional research strategy

such as critical realist and its respective criteria for judging SP theory. Ogilvy (2005) posited, "Although I am sympathetic to Feyerabend's critique of the positivistic philosophy of science, I think that recent developments in complexity theory allow for a philosophy of science that is neither as restrictive as the kind of positivistic philosophy of science to which Feyerabend objects, nor as loose as his methodological anarchism" (p. 332). Ogilvy (2005) characterized SP as a new science that balanced necessity with the power of desire creating a space for freedom without falling into a scientifically predictable fate,

> Put Hegel and Kauffman together (with Hayden White's help), and you get a science that not only covers the force of necessity; you get a science that also accommodates the power of desire—not only what *must* be, but also what we *want* to be; not only a degree of determinism, but also some room for freedom. We get the kind of science we need for shaping the future as well as we can without falling into the paradox of a scientifically predictable fate defeating the efficacy of good intentions (p. 338).

For Ogilvy (2005), "…it is worth every effort to explore and identify our biases. But it is a mistake to maintain that we can root out all of our biases, all of our predispositions, all of our assumptions and pre-judgments, to achieve some sort of context-free objectivity" (p. 339-340). Instead Ogilvy (2005) argued, "Both the science of what is and the art of what might be come together in sets of scenarios" (p. 345). Thus critical realist criteria stressed, "…the future replaces objectivity as the horizon for justification" (Ogilvy, 2005, p. 331). Criteria for judging scenario construction from a critical realist perspective consist of five criteria: plausibility, differentiation, consistency, decision-making utility, and challenges world views (Wilson, 1998). In the critical realist project, quality judgements about SP

theory truth claims are evaluated by ad hoc SP inquiry communities using Wilson's (1988) five quality criteria. Bells criteria for judging an interpretive theory of SP are adopted by this study, because the criteria is specific to SP and lend itself to a theory-to-practice theory building model of scenario planning. The next section of Chapter IV specifies an empirical research process for the proposed theory of scenario planning.

Empirical Research Meaning Theory Testing

Dubin's (1969/1978) theory building model consisted of two components: a theoretical research model meaning theory building and an empirical research model meaning theory testing. The empirical research component consisted of (a) propositions, (b) empirical indicators, (c) hypotheses (d) and testing. While testing the proposed theoretical research model of scenario planning is beyond the scope of this study, establishing a minimum set of testing criteria will be offered in support of future empirical research initiatives.

Step One—Scenario Planning Theory Propositions

Propositions represent the stage of theory building where predictions become the focus of the theorist-researcher's attention (Dubin, 1969/1978). According to Dubin (1969/1978) propositions are specifically, "…concerned with predictions about the values of units in the system" (p. 159). In other words propositions are truth statements about a theoretical model (Dubin, 1969/1978). Dubin defined propositions in this manner, "A proposition, then, is a truth statement about a model when the model is fully specified in its units, laws of interaction, boundary, and system states. Any truth statement that can be made about such a system is a proposition of the system (p. 160). Dubin noted the "metaphysical connotations" (

p. 160) of propositions is to continue the theory building system of logic of the theory builder.

According to Dubin (1969/1978), "The only criterion of consistency that propositions of a model need to meet is the criterion that their truth be established by reference to only one system of logic for all the propositions set forth about the model" (p. 160). In order to solidify the purpose of propositions or truth statements about scientific models Dubin avered, "There is no logic by which the truth statements about one model may be brought into congruence with those of a different model" (p. 161). Dubin asserted, "… the use of the model is to generate predictions or to make truth statements about the model in operation" (p. 163). Propositions take the form of "if…then" clauses and may be formatted and chained together as statements:

If (a), then (b);

If (b), then (c); etc.

Propositions of a model, then, are truth statements, or predictions, of the values taken by one or more units of a model (Dubin, 1969/1978, p. 165).

Propositions for SP theory in this study include:

Strategic Proposition 1: *If the contextual influence value of organizational self represented by the dominant coalition is positively associated with situation of action, then the collective construct influence will manifest downward contributing to organizational behavior.*

Strategic Proposition 2: *If situation of action is positively associated with sets of multiple sets of scenarios, then the collective construct influence will emerge bottom up contributing to organizational behavior.*

Strategic Proposition 3: *If sets of scenarios are positively associated with SP participant's cognition during iterative experiential learning process, then SP participants will reciprocally detect error in espoused theories during dialogic, dialectic, and hermeneutic appropriation challenging idiosyncratic and collective world assumptions influencing organizational behavior.*

Strategic Proposition 4: *If SP participant's cognitive inquiry during experiential learning is positively associated with strategic action, then collective construct will emerge upward contributing to theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans.*

Strategic Proposition 5: *If strategic action is positively associated with organizational identity, then collective construct will manifest downward supplanting organization espoused theories of action with new theories-in-use.*

Strategic Proposition 6: *If organizational self is positively associated with its situation of action, situation of action is positively associated with scenarios, then SP participant's espoused theories will be positively associated with experiential learning, and organization strategic actions can be positively associated with theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans.*

Assessing the Propositions of a Theoretical Research Model of Scenario Planning

Each proposition was logically derived using the same deductive logic as used in specifying the theoretical research model of scenario planning. Strategic propositions were selected accounting for transition states of the applied theory building model in the interest of parsimony criteria (Dubin, 1969/1978). Positive propositions were established to set forth the

value of one unit in association to a corresponding value of another theoretical research unit (Dubin, 1969/1978). The chain of "if…then" positive type propositions are consistent in logic, accurate in relationships, and parsimonious (Dubin, 1969/1978).

Step Two—Scenario Planning Theory Empirical Indicators

For the first time in the theory building process analytical attention shifts from SP model construction to the empirical world. Regarding the empirical indicators phase of empirical research Dubin (1969/1978) argued, "We are at that point in the theory-building-research cycle at which the propositions or predictions of the model must now be put to the test of their empirical accuracy" (p. 182). The first step to test a theoretical research model of scenario planning is to define for each proposition to be tested empirical indicator(s) that will measure the values of each unit within a proposition (Dubin, 1969/1978). Dubin informed us, "An empirical indicator is an operation employed by a researcher to secure measurements of values on a unit" (p. 182). While empirical indicators are most often numbers Dubin noted, "The measured value of a unit may also be a category like *present* or *absent*, *central* or *peripheral*, *dominant* or *submissive*, and *sociometric star* or *sociometric isolate*" (p. 183).

Scenario planning theory empirical indicators take the form of enumerative, relational and relative units. "…an enumerative unit is a characteristic of a thing in all its conditions. This definition suggests that any empirical indicator used to establish the value of an enumerative unit has to generate nonzero values for that unit in whatever condition the unit is found" (Dubin, 1969/1978, p. 186). "Where the relational unit is based upon an interaction among properties, the empirical indicator of this relational unit must apprehend the interaction" (Dubin, 1969/1978, p. 188). "The primary characteristic of a relative indicator is

that it may be employed as an empirical indicator of several different theoretical units" (Dubin, 1969/1978, p. 195). Lastly, horizontal transfer of collective constructs is assumed in order to focus on the implications of vertical transfer of collective constructs. From a philosophical hermeneutic philosophy perspective, socio-cognitive empirical indicators drive organizational behavior meaning organizational behavior is determined by (a) social subperformance system-social performance system relationships and (b) cognitive properties of individuals and collectivities of an employing organization. Individual, collectivity, as well as Organizational Self (actor) is an ontological mode of being in the world (Gadamer, 1965/1975).

Argyris and Schön (1978) averred an, "Organization is an artifact of individual ways of representing organization" (p. 16). Therefore, the SP theorist-researcher must possess a framework for social subperformance system-social performance system relationships, as well as within organization level issues prior to conceptualizing or predicting SP theory empirical indicators. The conceptual model for this study neither exclusively focuses on single organizations nor dyadic relationships within an organization but also includes interorganizational network relationships. Thus, level of analysis when studying organization interorganizational relationships is focused on the organization as a homogeneous whole (Eisenhardt & Schoonhoven, 1996; Uzzi, 1997), but as a point of reference in the relational system of interaction (Parsons, 1951). It should be explicitly noted that this SP Theory acknowledges, but does attempt to account for complex characters of interorganizational network relationships other than to note organizations participating in a transactional

exchange relationship subschema is assumed to be in a homogeneous relationship while the reverse would assumed in independent interorganizational relationships.

Table 36 simple illustrates empirical indicators of SP theory. Empirical indicator for Organizational Self is the "*cognitive belief-system"* of dominant leadership's (individuals and collectivities) strategic espoused theories driving organizational behavior. Empirical indicator for situation of action is "social subperformance system-social performance system relationships". Scenarios have previously been classified in this study as catalyst units in the theory of SP. Therefore, there is no empirical indicator will be required to provide empirical measurements of this theoretical unit. Verifying the presence of scenarios during SP inquiry is sufficient to confirm their presence in SP Theory building. Empirical indicator for experiential learning is SP inquirers "s*ingle-loop learning"* and "*double-loop learning"* during fusion of horizons. Empirical indicator for strategic action is the "*cognitive belief-system"* of organization membership regarding strategic theories-in-use driving organizational behavior.

Table 36 Socio-Cognitive Empirical Indicators Driving Organizational Behavior: Emergence Mo for Vertical Transfer of Collective Constructs in Scenario Planning Theory.			
Collective Construct Domain	Outcome-based Empirical Indicators	Construct Origin/Construc t Manifest	Form of Emergence/ Descriptive Characteristics of Emergence Process
Organizational Self	**Cognitive b*elief-system* (or personal constructs)** of dominant leadership's (individuals and collectivities) strategic espoused theories driving organizational behavior	Corporate-level/ Contextual factors at the corporate-level with direct affect on business units and individual employees	• **Entrainment cycle:** • Emergent process: Composition • Theoretical process: Isomorphism • Lower-level content: Same x, x , x • **Stages of organization life cycles other than entrainment process:** • Emergent process: Configural • Theoretical process: Discontinuity • Lower-level content: Same x, y , z
Situation of Action	***Social subperformance system-social performance system relationships***	Corporate-level/ Direct effect on business units	• **Entrainment cycle:** • Emergent process: Composition • Theoretical process: Isomorphism • Lower-level content: Same x, x , x • **Stages of organization life cycles other than entrainment process:** • Emergent process: Configural • Theoretical process: Discontinuity • Lower-level content: Same x, y , z

Table 36 Continued.			
Experiential Learning	SP inquirers ***Single-loop learning*** and ***double-loop learning*** during fusion of horizons	Reciprocal process; • Corporate-level • Collectivity-level • Individual-level	• **Entrainment cycle:** • Emergent process: Configural • Theoretical process: Discontinuity • Lower-level content: Same x, y , z • Omni directional contributions • **Stages of organization life cycles other than entrainment process:** • Emergent process: Configural • Theoretical process: Discontinuity • Lower-level content: Same x, y , z
Strategic Action	**Cognitive b*elief-system* (or personal constructs)** of organization membership regarding strategic theories-in-use driving organizational behavior	Corporate-level/ Direct effect on multilevel business strategic action plans	• **Entrainment cycle:** • Emergent process: Composition • Theoretical process: Isomorphism • Lower-level content: Same x, x , x • **Stages of organization life cycles other than entrainment process:** • Emergent process: Configural • Theoretical process: Discontinuity • Lower-level content: Same x, y , z

The empirical indicators for a theory of scenario planning during entrainment processes are as follows:

Empirical Indicator 1: *The contextual influence value of collective construct (organizational self) will manifest downward into a homogeneous whole organization as SP inquirers*

become congruent with corporate-level espoused theories of action driving organization behavior.

Empirical Indicator 2: *The value of collective construct (situations of action) will emerge bottom up as a result of SP inquirers orientation toward social subperformance system-social performance system relationships.*

Empirical Indicator 3: *The value of collective construct (experiential learning) will increase in a reciprocal manner during SP inquiry by individuals and collectivities through fusion of horizons hermeneutic appropriation.*

Empirical Indicator 4: *The value of collective construct (strategic action) will manifest downward into a homogeneous whole organization as the membership of an organization become congruent with theories-in-use driving organization behavior.*

Assessing Empirical Indicators

Dubin (1969/1978) defined two principal criteria for assessing the quality of empirical indicators, "The operations involved in the relation between the observer and the apparatus used for observing are explicitly set forth so that they may be duplicated by any other equally trained observer. The observing operation produces equivalent values for the same sample when employed by different observers" (p. 183). The central task of operationalizing empirical test is directly related to propositions or predictions of the SP theory model being put to the test. Specifically, quality criteria are concerned with validity and reliability of the proposed theory of scenario planning. Since the focus of this study has been theory construction resulting in an interpretive, multilevel theory of scenario planning,

the research has not produced empirical research. Actual testing of the proposed theory of scenario planning is beyond the scope of this study.

Step Three—Scenario Planning Theory Hypotheses

Dubin (1969/1978) posited, "Whereas the conversion to empirical indicators is the necessary condition for making the empirical test, the sufficient condition is to convert the whole propositional statement into an hypothesis" (p. 182). "Every hypothesis is homologous with the proposition for which it stands" (p. 207). Dubin defined hypothesis as, "predictions about values of units of a theory in which empirical indicators are employed for the named unit in each proposition" (p. 206). Concerning the number of hypotheses warranted for empirical research Dubin stated, "The general rule is that a new hypothesis is established each time a different empirical indicator is employed for any one of the units designated in a proposition" (p. 209). A hypothesis construction strategy will be used to limit research time and resources to maximize effective testing of the proposed SP theory model (Dubin, 1969/1978). Dubin put forth, "the general form of an hypothesis is a conditional prediction about the relationship between two or more things, followed by a figurative question mark" (p. 16).

The hypotheses for a theory of scenario planning formatted in correlation terminology are as follows:

Hypothesis 1: *If collective construct (organizational self) proxy SP inquirer's cognitive belief-system regarding strategic espoused theories driving organizational behavior is positively associated with situation of action, then the collective construct influence will manifest downward contributing to organizational behavior?*

Hypothesis 2: *If collective construct (situation of action) is positively associated with sets of multiple plausible scenarios, then the collective construct social subperformance system-social performance system relationship influences will emerge upward contributing to organizational behavior?*

Hypothesis 3: *If sets of scenarios are positively associated with SP participant's cognition during iterative experiential learning process, then SP participants will reciprocally detect error in espoused theories during dialogic, dialectic, and hermeneutic appropriation challenging idiosyncratic and collective world assumptions influencing organizational behavior?*

Hypothesis 4: *If collective construct (experiential learning) is positively associated with strategic action, then SP participant single-loop learning and double-loop learning during fusion of horizons will emerge bottom up contributing to theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans?*

Hypothesis 5: *If organizational self is positively associated with its situation of action, situation of action is positively associated with scenarios, then SP participant's espoused theories will be positively associated with experiential learning, and organization strategic actions can be positively associated with theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans?*

Assessing Hypotheses

Dubin (1969/1978) required a minimum of at least one hypothesis for each value in a proposition be tested. Dubin also put forth extensive and intensive hypothesis test whereby an extensive test would test strategic propositions where something notable was occurring in the model. "The alternative to an extensive test of a model is to concentrate attention intensively on one or several of its strategic propositions" (p. 200). Hypothesis for this study used both the extensive and intensive test technique. Dubin averred, "An hypothesis is a statement of prediction of what will be true in the real world if the evidence from the real world is marshaled" (p. 10). Thus, the hypotheses specified in this empirical research model meet Dubin's criteria.

Step Four—Scenario Planning Theory Testing

As the theoretical research model of SP was under construction, the theory building process adhered to Dubin's (1968/1978) hypothetical-deductive model for judging the scientific model. Specifically, Dubin's quality verification criterion was incorporated throughout the SP theory development process consisting of the following criteria:

- Criteria for evaluating units of theory:

  Rigor and exactness, parsimony, completeness, and logical consistency
- Criteria for evaluating laws of interaction:

  Parsimony
- Criteria for evaluating boundaries:

  Syllogism
- Criteria for evaluating system states:

Inclusiveness, determinant values for units, and state of system persistence over time

- Criteria for evaluating propositions:

  Consistency, accuracy, parsimony

- Criteria for evaluating empirical indicators:

  Operation of measurement is specified and results produced by operation are specified

- Criteria for evaluating hypotheses:

  At least one hypothesis for each proposition

Thus, when empirical data are marshaled to test the truth predictions of the theoretical research model, the theory of scenario planning should represent its empirical domain (Dubin, 1969/1978). With a fully constructed SP theory building model at-hand consideration for testing the phenomenon of interest being grounded in the model must be discussed next.

As previously stated, it is beyond the scope of this study to test the proposed theory of scenario planning. Dubin (1969/1978) informed us, "All that is demanded of the theorist is (1) that he [she] be willing that his [her] theory be tested and (2) that he [she] be willing to employ scientifically acceptable criteria in evaluating the results of the empirical test" (p. 217). Given the identification of empirical research propositions, empirical indicators, and hypotheses in this chapter; testing the theoretical model of scenario planning is enabled to proceed along several lines of scholarly inquiry. An agenda for testing the scientific model of SP has been fully described to include judging the theory building model (Dubin, 1969/1978), as well as outcomes of scenario construction (Wilson, 1998).

An Agenda for Testing a Theoretical Research Model of Scenario Planning

In 2000, Kozlowski and Klein pointed out, "There is no one, all-encompassing multilevel data-analytic strategy that is appropriate to all research questions. Particular techniques are based on different statistical and data-structure assumptions, are better suited to particular types of research questions, and have different strengths and weaknesses" (p. 51). Selection of an analytic strategy for this study is based on consistency between the type of constructs, data sampling, and the research question. However, a brief narrative discussion of several analytic techniques is offered to represent MLTB contributions of this method.

SP inquirers need data collection and analysis method contributing to a first person understanding that is local and contextual in nature. Scavarda et al. (2006) averred, "In the social sciences, a causal map is generally considered to be a particular type of cognitive map, which is an individual's mental model of the relationships (causal or otherwise) among the elements of a system" (p. 264). Cognitive mapping outcomes can contribute to graph theory concepts, such as paths, cycles, and components helpful in the analysis of complex social performance system structures of interconnection. The resulting mathematical system is similar to the network system developed by Maruyama (1963) to analyze mutual causal relationships in the environment. For a fuller description of cognitive or causal mapping, please refer back to chapter IV of this study.

Analysis of covariance (ACOVA), within-and-between analysis (WABA), multilevel random-coefficient models (MRCM) such as hierarchical linear modeling (HLM) are representative of quantitative analytic strategies capable of addressing contextual analytic strategies will be discussed. ANCOVA is among the earliest approaches to analyze

multilevel contextual analysis (Kozlowski & Klein, 2000). Kozlowski and Klein (2000) explained that the ANCOVA approach, "…treats the individual-level variables as covariates and then uses unit membership as an independent variable to determine how much variance is attributable to the unit" (p. 49). While ANCOVA is able to attend to the independent variable (unit membership), it is not able to discern specific constructs relevant to unit membership responsible for emergent phenomena between groups (Kozlowski & Klein, 2000). WABA examines in two phases bivariate relationships of theoretical units at multiple levels. Kozlowski and Klein explained the classic decomposition of within-and-between variances in this way, "WABA is designed to assess whether measures, treated one at a time, show variability…both within and across units…. WABA II is designed to assess whether two measures covary…both within and across units" (p. 50).

HLM is a simultaneous two-stage procedure that Kozlowski and Klein (2000) explained, "Level I analyses estimate within-unit intercepts (mean) and slopes (relations)…Thus, Level 2 analyses model the effects of unit-level predictors on unit intercepts and slopes so that effects on intercepts are indicative of direct cross-level relations, and the effects on the slopes are indicative of cross-level moderation" (p. 51). It should be noted, Kozlowski and Klein averred, "We reiterate that the conceptual meaning of higher-level aggregations (however they are statistically determined) must have an a priori theoretical foundation" (p. 51). An *a priori* theoretical foundation consideration is problematic for SP theory building if data-analytic strategy is constrained or otherwise limited to being independent of experience such as through mathematical manipulation and deductive reason alone. Experiential learning (which is a SP theoretical unit in this study) is

an *a posteriori* form of knowledge, justification or argument, in that, SP participants (as first-person informants about collective processes) utilize inductive reasoning focusing on collective phenomena.

Summary

This chapter has specified the empirical research model meaning theory testing that included propositions, empirical indicators, and hypotheses of a Theory of Scenario Planning. To summarize, empirical research elements are as follows:

Theory of scenario planning propositions

Strategic Proposition 1: *If the contextual influence value of organizational self represented by the dominant coalition is positively associated with situation of action, then the collective construct influence will manifest downward contributing to organizational behavior.*

Strategic Proposition 2: *If situation of action is positively associated with sets of multiple sets of scenarios, then the collective construct influence will emerge bottom up contributing to organizational behavior.*

Strategic Proposition 3: *If sets of scenarios are positively associated with SP participant's cognition during iterative experiential learning process, then SP participants will reciprocally detect error in espoused theories during dialogic, dialectic, and hermeneutic appropriation challenging idiosyncratic and collective world assumptions influencing organizational behavior.*

Strategic Proposition 4: *If SP participant's cognitive inquiry during experiential learning is positively associated with strategic action, then collective construct will emerge*

upward contributing to theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans.

Strategic Proposition 5: *If strategic action is positively associated with organizational identity, then collective construct will manifest downward supplanting organization espoused theories of action with new theories-in-use.*

Strategic Proposition 6: *If organizational self is positively associated with its situation of action, situation of action is positively associated with scenarios, then SP participant's espoused theories will be positively associated with experiential learning, and organization strategic actions can be positively associated with theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans.*

Theory of scenario planning empirical indicators

Empirical Indicator 1: *The contextual influence value of collective construct (organizational self) will manifest downward into a homogeneous whole organization as SP inquirers become congruent with corporate-level espoused theories of action driving organization behavior.*

Empirical Indicator 2: *The value of collective construct (situations of action) will emerge bottom up as a result of SP inquirers orientation toward social subperformance system-social performance system relationships.*

Empirical Indicator 3: *The value of collective construct (experiential learning) will increase in a reciprocal manner during SP inquiry by individuals and collectivities through fusion of horizons hermeneutic appropriation.*

Empirical Indicator 4: *The value of collective construct (strategic action) will manifest downward into a homogeneous whole organization as the membership of an organization become congruent with theories-in-use driving organization behavior.*

Theory of scenario planning hypotheses

Hypothesis 1: *If collective construct (organizational self) proxy SP inquirer's cognitive belief-system regarding strategic espoused theories driving organizational behavior is positively associated with situation of action, then the collective construct influence will manifest downward contributing to organizational behavior?*

Hypothesis 2: *If collective construct (situation of action) is positively associated with sets of multiple plausible scenarios, then the collective construct social subperformance system-social performance system relationship influences will emerge upward contributing to organizational behavior?*

Hypothesis 3: *If sets of scenarios are positively associated with SP participant's cognition during iterative experiential learning process, then SP participants will reciprocally detect error in espoused theories during dialogic, dialectic, and hermeneutic appropriation challenging idiosyncratic and collective world assumptions influencing organizational behavior?*

Hypothesis 4: *If collective construct (experiential learning) is positively associated with strategic action, then SP participant single-loop learning and double-loop learning during fusion of horizons will emerge bottom up contributing to theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans?*

Hypothesis 5: *If organizational self is positively associated with its situation of action, situation of action is positively associated with scenarios, then SP participant's espoused theories will be positively associated with experiential learning, and organization strategic actions can be positively associated with theories-in-use documented in corporate-level strategic policy and multilevel business unit strategic action plans?*

The significance of this chapter was to make explicit propositions, empirical indicators, and hypotheses in order to operationalize theory testing. This chapter has further suggested the use of cognitive mapping, analysis of covariance (ACOVA), HLM to test the Theory of Scenario Planning. The studies outlined here are intended to test the proposed interpretive, multilevel theory of scenario planning and build on extant scenario planning research.

CHAPTER V

CONCLUSONS AND IMPLICATIONS FOR FUTURE HRD RESEARCH

Based on the SP and HRD interests, the threefold purpose of this study is to develop an interpretive multilevel theory of SP as a means of strengthening the theoretical connection between SP and HRD, advancing HRD theory building, and contributing to meaningful SP theory building. To accomplish these purposes, the following task were addressed: (1) conceptual development of the phenomenon of interest prior to entering the theory-research-development-practice cycle (Swanson, 1997); (2) constructing a multilevel perspective that expanded the vision of scenario planning scholars beyond the traditional intralevel view of their discipline; (3) modify the single-level, post-positivist theoretical research model developed by Dubin (1969/1978) in order to resolve foundational issues associated with theory building beyond the post-positivistic paradigm creating space for multilevel theory specification, operationalization guidelines that accommodating interpretive evaluation; (4) creating a platform for debate and theoretical exploration that advanced the study of scenario planning across disciplines; and (5) to create an interpretive outcome model that will inspire researchers to test its interpretive understanding (*verstehen*) capacity. Chapter II consisted of a review of the HRD, SP literature and, specifically, multilevel theory building (MLTB) literature which was analyzed and critiqued to inform the development of the theory building methodology for this study. Through exploration and critique of theory building philosophies; comprehensive eight-step, single-level, hypothetical-deductive theory building research methodology developed by Dubin (1969/1978); MLTB principles of Kozlowski and Klein (2000); and Morgeson and Hoffman's (1999) guidelines for collective MLTB

constructs; an improved MLTB model was developed to in order to ground an interpretive, multilevel theory of SP into the model as specified in Chapter III.

Chapter IV presented philosophical hermeneutics as the theory building philosophy guiding theory construction, specification of the theoretical research model meaning theory building of SP to include its constructs, laws of interaction among the constructs, boundaries of the theoretical model, and its system states. Following specification of the theoretical research model, SP theory was made ready for empirical testing of theoretical propositions. To operationalize the proposed empirical research model of scenario planning meaning theory testing included specification of SP propositions or truth statements about the theoretical model, empirical indicators, and testable hypotheses for the theory. Dubin (1969/1978) posited, "The argument about the reality of a theoretical model—that is, whether or not it indeed models the empirical world—is a scientific issue that is resolved by making research test of the model" (p. 12). The actual marshaling of data to test the theoretical research model is beyond the scope of this dissertation and remains open for future research. The remainder of this chapter will be a discussion on how the three purposes of this study were accomplished along with recommendations for future research including implications and of advancing interpretive, multilevel theory building of scenario planning with regards to practice, research, and theory. Equally important a section strengthening SP with HRD practice, research, and theory will be presented.

Implications for Scenario Planning Practice

The core problem statement underscoring this research addressed an uncritical application of theory of knowledge metaphysics found in Western thought being applied toward human sciences in general, and more specifically a post-positivist (foundational) epistemology in a social phenomenon such as scenario planning. This study advocated for a philosophical hermeneutics (antifoundational) epistemology contributing to the theory of understanding from arguments originating in European thought in general and, more specifically, argued for a theory of understanding—particularly as it pertains to SP as the phenomenon of interest. Secondly, the study is related to the need to explicate a multilevel theory of SP phenomenon.

This research provides an interpretive, multilevel theory of scenario planning informed by systems theory (Bouling, 1956) aimed at aiding SP practitioners and scholars in their understanding and validation of scenario planning. With an interpretive, multilevel theory building model of SP at-hand, SP practitioners may be able to reduce confusion regarding methods that have plagued the community for over 60-years of war games first used in the U.S. military (Bradfield et al., 2005; van der Heijden, 1996). Prior to this study there was no solid theoretically based foundation underpinning SP (Bradfield, 2008) practice to account for an interpretive, multilevel understanding of scenario planning.

Implications for Scenario Planning Research

Implications for SP research include viewing theory building research design beyond Dubin's (1969, 1978) two component model, methods for data collection and analysis, and criteria for judging the adequacy of SP theory. Dubin's (1969/1978) two component theory

building methodology did not explicate sufficient research design elements to account for the theory building paradigm or perspective. Torraco (2002) informed us, "…theorists tend to pursue their work in ways that reflect their deep-seated values and assumptions about what constitutes knowledge (epistemology) (p. 356)". Whereas, Denzin and Lincoln's (2008) five phases of the research provided a more informed theory building process, in that, "A research design describes a flexible set of guidelines that connect theoretical paradigms first to strategies of inquiry and second to methods of collecting empirical material" (p. 22). Therefore, SP theory building conducted in this study extended Dubin's (1969/1978) research design by incorporating Denzin and Lincoln's (2008) research design methodology. Implications for theorist-researchers undertaking future SP theory building from alternate inquiry paradigms includes explicating connections between theoretical paradigms and strategies of inquiry prior to entering the theory building model.

Researchers undertaking future data collection and data analysis in order to validate this interpretive, multilevel theory of SP shall consist of marshaling empirical data from mixed methods: qualitative and quantitative. A mixed method research design affords the researcher an opportunity to combine qualitative and quantitative data and their interaction into one study. Qualitative research should focus on inductive research and the contextual understanding and perspectives of SP inquirers. Additional logic concerning selection of qualitative research methods is centered in causal knowledge and inferential knowledge informing SP theory, due to the conjectural nature of uncertain future realities. First-person data collection and analytical processes are needed prior to and during small group working sessions. Specifically, the qualitative research methods recommended for this study is:

Cognitive mapping research and grounded theory methodology. While quantitative research will focus on deductive research of SP theory propositions in order to examine relationships among collective constructs, since SP theory hypotheses are designed around emergent properties of collective constructs.

Although well suited for multilevel data collection and analytical processes in this study, theory testing using quantitative research should be sequenced following qualitative research data collection and analysis in order to attend to first-person data collection from SP inquirers as individuals and collectivities. Quantitative research specified in Chapter IV capable of attending to multilevel theory included:

- Analysis of covariance (ACOVA);
- Within-and-between analysis (WABA);
- Multilevel random-coefficient models (MRCM) such as hierarchical linear modeling (HLM) are representative of quantitative analytic strategies capable of addressing contextual analytic strategies.

Criteria for judging the SP theory model specification is consistent with a synthesized version of Dubin's (1969/1978) eight-step, post-positivist, hypothetical-deductive theory building methodology, Wilson's (1988) five criteria for judging scenario construction, as well as Lincoln and Lynham's (2011) twelve criteria for assessing interpretive theory. In addition to judging the quality of the theoretical research model, criteria were also specified judging the adequacy of the phenomenon of interest grounded in the theory building model. To accomplish this research task, two criteria were specified in this study judging scenario construction and applied interpretive theory. Specifically, five criteria were called upon for

judging scenario construction which included plausibility, differentiation, consistency, decision-making utility, and challenges world views (Wilson, 1998). Since methods of collecting data and analyzing data is foremost a first-person data activity in SP, criteria for judging interpretive theory building quality is needed. Criteria chosen for judging the adequacy of interpretive SP theory outcomes consisted of twelve criteria: importance, precision and clarity, parsimony and simplicity, comprehensiveness, operationality, empirical validity or verification, fruitfulness, practicality, compellingness, saturation, prompt to action and fittingness (Lincoln & Lynham, 2011). Implications for future research should focus on validating criteria advanced in this study, as well as develop criteria from alternate inquiry paradigms.

Implications for Scenario Planning Theory

Scenario planning theory building in this study addressed an interpretive epistemology, MLTB methodology, and their interactions within the same study. An interpretive, multilevel theory of scenario planning now exist extending our knowledge of SP phenomenon previously understood from Chermack's (2003b, 2004b) single-level, post-positivist model which was limited to objective knowledge as Chermack utilized quantitative (Keough & Shanahan, 2008) research techniques to operationalize the theory. To date, Chermack (2003b, 2004b) has been the only identified contributor to SP theory building and connecting SP to HRD. Just as SP is an under researched phenomenon Garavan et al. (2004) argued, "…there is a significant gap in the current body of HRD theory and research. This concerns the investigation of multilevel questions and the adoption of multilevel perspectives" (p. 418). Garavan et al. (2004) posited, "The HRD field is characterized by a predominance of

the individual- and organizational-level contributions" (p. 418). HRD needs theorist-researchers attending to theory building and validation of theory to include attending to levels issues applying multiparadigmic, multidiscipline, multimethod or mixed methods research to advance the field of HRD toward academic discipline status.

Implications for Future HRD Practice

By constructing theory of SP from an alternate theoretical paradigm or perspective, HRD practice is better equipped to assist SP practitioners develop interpretive, multilevel theories on behalf of specific social performance systems or organizations from the ontology position of being located in the world. HRD practice may now develop a pedagogical approach to teaching SP theory that tells us what the phenomenon is and how it works from an interpretive theoretical paradigm or perspective. Additionally, HRD practice is better prepared to apply organizational theories to action research where organizational self is equated to ontological being in an open performance system and open, complex, uncertain world represented by multiple plausible futures.

Implications for Future HRD Research

The epistemological status of SP phenomenon has lagged behind methodological techniques (Bell, 2003; Walton, 2008). Additional research is needed to connect outcomes of SP inquiry with multilevel organizational development, action planning and performance improvement. Likewise, Garavan et al. (2004) argued, "…there is a significant gap in the current body of HRD theory and research. Chermack and Swanson (2008) posited, "Theory and research that support scenario planning…." (p. 130) has substantial opportunities for HRD professionals to position SP as HRD's primary strategic learning tool. For SP to be

fully understood and become HRD's strategic learning tool (Chermack & Swanson, 2008) more research on SP as a phenomenon of interest has to be undertaken from an array of theoretical paradigms, research strategies, methods of collecting and analyzing empirical data, and criteria for judging quality theory from alternate perspectives. Although SP has been positioned by Swanson and Holton (2009) to be a primary strategic learning tool, SP theory building is critical to closing the SP practice—research gap. To close that gap, SP theory building needs to be undertaken by HRD professionals. Finally, futures studies research of which SP is a part needs to ask better questions from alternative theoretical perspectives, as well as develop criteria for judging alternative theory adequacy.

Implications for Future HRD Theory

Garavan et al. (2004) posited, "The HRD field is characterized by a predominance of the individual- and organizational-level contributions" (p. 418). While Chermack (2003b, 2004b) contributed to SP theory building in general and specifically connected SP to HRD, his work was focused at a single-level of analysis. Chermack's (2003b, 2004b) hypothetical-deductive theoretical research framework was consistent with a rationalist view of reality and produced a single-level, post-positivist theory of SP contributing to objective knowledge. Chermack's criteria for judging theory quality were aimed at the production of an empirically verified and trustworthy theory with test results that are objective, valid and reliable contributing to a theory of knowledge. Gioia and Pitre (1990) argued, "Traditional approaches to theory building are not entirely consistent with the assumptions of alternative research paradigms that are now assuming more prominence in organizational study" (p. 584).

This study produced an interpretive, multilevel theory of SP that extends our understanding of SP phenomenon and connects SP theory to HRD. Linking SP and HRD theory and practice has paradigmic implications as well as a system of thought and action implications in branches of philosophy such as: ontology, epistemology and axiology. The interpretive theory of SP extended our knowledge of alternative theory building assumptions, empirical research models, and criteria for judging interpretive theory building. Additionally, multilevel theory building extended our knowledge of theoretical research model variables/collective constructs (Morgeson & Hofmann, 1999). While each of these areas was contributing elements of this study, they also point toward implications for future research.

As a field of study, HRD's theory building research problem is under researched in the area of levels issues to include multilevel questions, as well as multilevel perspectives associated with social subperformance systems or organizations. From a theory building research design perspective, attending to social performance system levels issues has multiparadigmic, multidiscipline, multimethod or mixed methods research implications. It should be noted; theory building research conducted in this study reiterated SP theory building deficiencies identified by Chermack's (2004b) as remain deficiencies today. Chermack previously recommended SP theory building could be undertaken from alternate inquiry paradigms:

> These options are (a) theory building through grounded theory research (Egan, 2002), (b) theory building through meta-analysis research (Yang, 2002), (c) theory building through social construction research (Turnbull, 2002), (d) theory building through

case study research (Dooley, 2002), and (e) theory building through quantitative research (Dubin, 1969/1978; Lynham, 2002) (p. 303).

HRD theory building scholars need to conduct more theory building research utilizing research design capable of accommodating alternative research strategies, methods, as well as develop criteria for judging quality of theory grounded in alternative theoretical paradigms or perspectives. Additionally, resultant SP theory building models need to strengthen the connection between SP and HRD.

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